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With Which Is Combined

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International Moves to Stabilize News Print

Following Reductions Recently Made by Group of Canadian News Print Manufacturers, International Paper Company Announces New Price Schedule of $57 Per Ton, Delivered New York, for Balance of 1931 and for 1932—Maximum Price $62 Per Ton Fixed for New York For Five-Year Period Ending December 31, 1936

International Paper Company has announced its new price schedule for news print. This follows reductions recently made by Canadian manufacturers and stabilizes the market for news print over a period of years.

The new schedule runs from April 1, 1931 to December 31, 1936. A maximum price of $62 is fixed for New York for this period, and an average price of $3 less. For the balance of 1931 and for 1932 International's price at New York is $57 a ton. This is the same as recently announced for 1931 by other large factors in the news print field.

In its announcement to its customers International Paper Company says:

Strong Position of International

"International Paper Company in the United States, with its affiliated companies in Canada and Newfoundland, owns a group of the largest and most modern news print mills in existence; able to produce news print at a cost equaled, we believe, by that of no other large group. But International's activities are not confined to news print.

"With the mills it has recently built in the South it is the world's largest manufacturer of kraft paper. It is also one of the largest producers of book and bond papers and rotogravure papers. Its affiliated companies in Canada and New England have developed a large and increasing sale of hydro-electric current for industrial and other purposes.

"We know you will agree with us in our belief that with such strong news print mills and with such varied resources International is well equipped to serve you.

Schedule Designed to Promote Uniformity

"The program sumitted herewith is designed to accomplish three major results:—to give immediate and substantial assistance to our customers in the cost of their news print paper; to promote, as far as possible, uniformity and stability of price over a long period; and to guard our customers against drastic upward reactions.

"We are confident that publishers generally will welcome this program and will consider it not only constructive but very timely.

Chicago Paper Market Unchanged

CHICAGO, Ill., May 16, 1931.—Conditions in the Chicago paper market in general have not changed over last week The market is partly drifting here and there with some evidences of improvement in various lines. Kraft, in particular, is reported to be holding firm and, while the price range is by no means satisfactory, the basis for improvement has been laid. The continued slowness of business has made the general market rather unsettled, with rumors coming from many directions as to price cuts, etc. The consensus of opinion, however, is that conditions will improve rather than get worse.

The fine paper market continues to show the most strength, with the better grades reported to be making the best showing. News print, nervous over the price cut, is slowly going through a readjustment period, say reports. Some improvement in advertising lineage is helping to counteract other losses and by Fall the market hopes to be near normal. Glassines are reported still off color. Board, on a curtailed production basis, is making some headway in cutting down over-production. Books and covers remain practically unchanged. Ground woods are carried along with the news print market, in a not too satisfactory position. The waste paper market is reported slow and little changed.

Smith Paper Co. Gets Tax Rebates

WASHINGTON, D. C., May 20, 1931.—The Smith Paper Company of Lee, Mass., has been awarded considerable tax rebates by the Bureau of Internal Revenue because of over-assessments of income and profits taxes as follows: for the year 1917, $110,055.90; for 1918, $336,683.44; for 1919, $2,184.80; and for 1920, $22,040.91.

Not With E. D. Jones & Sons Co.

PITTSFIELD, Mass., May 18, 1931.—The E. D. Jones & Sons Company of this city announce that R. D. Kehoe who acted as a sales representative for it during the four months ending April 1, 1931, is no longer connected with the company.

D. C. Everest Analyzes Ills of Paper Industry

Characterizes Present Situation as Case of Acute Indigestion, at Spring Meeting of Superintendents Association, Held In Wisconsin—Advocates Repeal or Modification of Sherman Act, and Adoption of Five Day Week, to Remedy Conditions

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 18, 1931.—Lowering of production costs, the contemplation of a five day working week and other economic and technical subjects proved of major interest at the spring meeting of the Northwest Division of the American Paper and Pulp Mill Superintendents Association, at Rothschild and Wausau, Wis., May 15 and 16. One of the high lights was an address by D. Clark Everest, vice president and general manager of the Marathon Paper Mills Company, who analyzed the particular ills of the paper industry as related to the general business depression, and advocacy of a repeal or modification of the Sherman Act as one of the remedies.

Superintendents were guests of the Marathon mills at Rothschild on Friday, where they inspected the properties of this large industry. The closing day's sessions were held at Wausau, where weighty round table conferences were mixed with golf tournaments, and with a bridge luncheon for visiting ladies. J. R. Simpson, of the Consolidated Water Power and Paper Company won the prize for the low gross golf score.

John D. Rue Discusses Chlorine

Since many of the mills have gone into production of bleached papers, the division invited John D. Rue, specialist from the Hooker Electro-Chemical Company, Niagara Falls, N. Y., to explain the possibilities of cost reduction by using chlorine in bleaching. Mr. Rue traced the history of chlorinization, explaining that it had been utilized as far back as 1834 but the process has been too costly until recent years, when invention had made the chemical obtainable on a basis commercially practicable. He explained the various methods by which chlorine could be utilized, gave figures as to the saving in costs, and declared also that a whiter and stronger fibered paper pulp was the result. A long discussion followed his address.

Mr. Everest, in his address, characterized the present situation in the paper industry, as in most other lines of manufacture, as a case of "acute indigestion."

"We have had but one idea and that was to increase production and reduce costs," said Mr. Everest. "Blessed with great natural resources, we have been in constant battle to develop and utilize them. We have provided potential capacity for a production in all grades far beyond the ability of the country to absorb it. We have produced too much food. Food, in our case, has been raw materials, power, money, and personnel, which, under direction of management, has created a case of indigestion which will require considerable time to cure.

News Print Over-Production

"Removal of the duty on news print brought about the establishment of the majority of news print producing units in Canada, where under government pressure to utilize pulpwood and power resources, that country developed production that has far outrun the consumptive ability of the world.

"We had just about recovered from the trouble of shifting of mills on to other grades created by the removal of the tariff, when along comes the recent decline in news print price and we now find ourselves facing another period of grade shifting which will require a long time to digest.

"News print is not alone in this situation. Wrapping mills are floundering around trying to find something else to make. Most of the sulphite wrapping plants go to bleached papers and create a case of indigestion both to themselves and also the presently established bleached paper mills. Glassine manufacturers have the problem of cellophane to combat. Board manufacturers have had their ups and downs. Sixty per cent of capacity would take care of the requirements."

Adoption of a five day week was advocated by the speaker as one of the possible remedies to the orgy of production. "If the five day week becomes a reality," he remarked, "then the total wages for those five days must be equal to those a man would have received if he worked six days on a lower rate per hour. If there is to be a deflation of labor, the paper industry will have to maintain its schedules on a parity with other lines of industry. If everyone is on a five day basis, labor costs will be figured accordingly, and the sales price increased to cover the additional burden."

Opposes Lowering of Tariff

It is Mr. Everest's belief that the lowering of tariffs to right the situation is "pure bunk." Ninety per cent of the output is consumed right here in this country, and he expressed the opinion that it is better to protect this ninety per cent than to face the ruinous competition of bankrupt foreign nations would cause by dumping products in this country on a basis of cheap labor and low living standards. He referred to the kraft dumping activities of Sweden as an example, with a reduction from $48 to $28 a ton on kraft pulp.

"Two things will help us," declared Mr. Everest in speaking of the cure for this indigestion. "First, the repeal or modification of the Sherman Act in such a way as to permit operating all industry by agreement to meet the demand as evidenced by the statistics of consumption in each industry as compiled by associations under supervision of government agency, if necessary; second, the maintenance of our tariff protection administered and fixed by a commission of experts rather than to have complete revision of all schedules by Congress on the slighest political provocation."

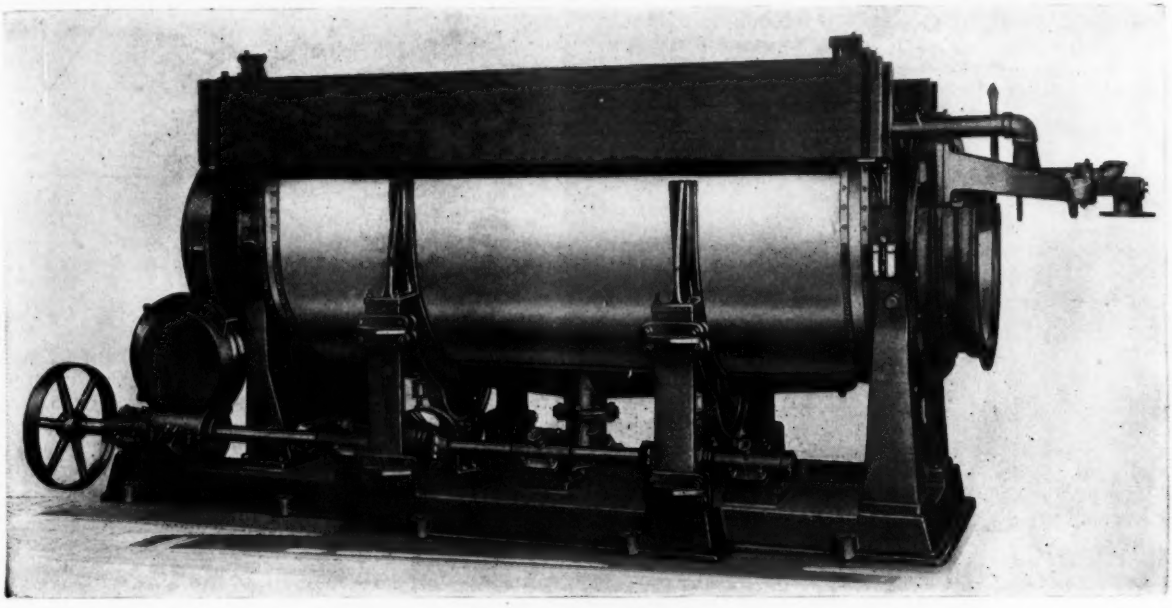
New Paper Chemistry Institute Building

Progress is being made on the construction of the new building for the Institute of Paper Chemistry at Lawrence College, Appleton, Wis. The foundation has been completed and steel work is in progress on the superstructure. The front of the building is to be of Lannon stone, and the side walls of brick. The heating system is to consist of two boilers, one using coal and the other oil. A preheating system is also to be installed with 3,000 watts of electricity for quick production of steam.

The cornerstone is to be laid June 8, with appropriate ceremonies. The program is being arranged in connection with the commencement exercises at Lawrence College. The building will be completed about August 1.

A more general interest in the planting of pulpwood is urged by Roy L. Pinn, a former state assemblyman, in statements given out to the press of the state. He points out that imported spruce now costs $20.62 a cord, f.o.b. mill, and $17.87 for domestic.

Bird Screens



BIRD MACHINERY

deliver cleaner stock..... more of it..... at a lower cost per ton

BIRD MACHINE COMPANY

South Walpole ◢◤ Massachusetts

4647

Price Bros. Report Is Highly Satisfactory

Usual Dividends Have Been Earned and Paid—Col. J. H. Price Expresses Opinion That There Is Little Hope for Better Times In News Print Industry Until Difficulties Are Adjusted On Sound Basis—Board of Directors and Officers Re-Elected.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 18, 1931.—The annual meeting of Price Bros. & Co., Ltd., of Quebec, held during the past week, has attracted a good deal of attention because of the outstanding position occupied by the company as an independent news print producer, and also because of the recent action of the President, Col. John H. Price, in resigning from the Newsprint Institute of Canada. In presenting a report which was considered highly satisfactory under the circumstances, Mr. Price said: "The situation in the news print industry is still anything but satisfactory and certainly worse today than it was a year ago. Not only has the consumption of news print fallen off, but the current price, as recently announced, is five dollars per ton less at the mill. The strained financial condition in which some of our associates in the industry find themselves does not help the situation, and I feel strongly that until these difficulties are boldly faced and properly adjusted on a sound basis there is little hope for the industry as a whole enjoying better times.

"We have come through another trying year of world-wide depression, and the news print and lumber industries have been no exception. Despite these conditions, however, it is gratifying to know that the positions of your company, as disclosed in the accounts, is sound and that the usual dividends have been earned and paid. Upon examination of the balance sheet you will find that the current assets are twice the amount of the current liabilities without including in current assets the investment item of approximately $5,500,000.

"The net current assets, excluding investments, are around $500,000 less than at the same time last year and this is fully accounted for by the fact that we have completed payment of our new head office building—'Price House'—as well as having purchased $600,000 debentures of the Donnacona Paper Company, Ltd. Since the close of the accounts we have arranged a mortgage of $750,000 secured by 'Price House' on satisfactory terms, which will put back the liquid position of the company to at least as sound a position as it was a year ago, which, I submit, is most satisfactory. The allowances for depreciation of properties and depletion of limits have been calculated upon the same bases as heretofore, both of which I am sure you will agree are generous.

"The physical condition of your company's properties has as heretofore been well maintained out of revenue and all inventories have been carefully taken and conservatively valued. We again ran our lumber mills at Rimouski, Price, Matane and Salmon Lake to capacity as being the most economic basis on which to operate. Our production approximated seventy million feet of sawn lumber, as well as the usual quantity of ties and shingles, which, despite the serious depression in the lumber trade, we have been able to dispose of with profit to your company.

"It may interest you to know that we continue to make satisfactory profits in the manufacture and sale of sulphite chips from sawmill waste. During the past two years the profits from the Jonquiere mill considerably diminished on account of the severe competition in the sale of that mill's diversified products, consisting of wall paper, different grades of boards, tickets, etc. In order to combat this we installed a laboratory at that mill and reorganized its operations in such a way that today we are not only producing better but more saleable grades of products and feel that in due course the returns from this mill will again be normal.

"At the beginning of this calendar year, your board deemed it advisable to reduce the staff where possible and to make a reduction in salaries, graded from ten per cent down, and on the third of this month a new wages scale, showing more or less similar reduction, was put in force at all of your company's mills. Your board felt justified in taking this action on the grounds that wages were from time to time increased during prosperous years and that employees could readily accept a reduction now with the industry in the condition it is and the cost of living considerably lower. In conclusion, I wish to express my thanks and that of my board to all members of the staff and the organization as a whole for their continued loyalty and constant efforts in the carrying out of their duties under circumstances aggravated by curtailed operations."

The report was adopted and the board of directors and officers were re-elected without change.

Quebec's Forest Resources

A booklet dealing with the forests and forest resources of the Province of Quebec has been prepared by the Provincial Department of Lands and Forests. It shows that the forestry resources cover an area of 155,577,120 acres, or 556,865 square miles, and contain the equivalent of 708,633,819 cords of wood, having a total value of $1,000,000,000. The land under cultivation in the Province covers an area of 34,000 square miles.

To Protect Douglas Fir

British Columbia lumbermen, aided by the Provincial Government, are trying to increase the sales of hemlock, pine and cedar as a means of relieving the pressure on the famous Douglas fir, which for many years has been the industry's chief stock-in-trade on the Pacific Coast.

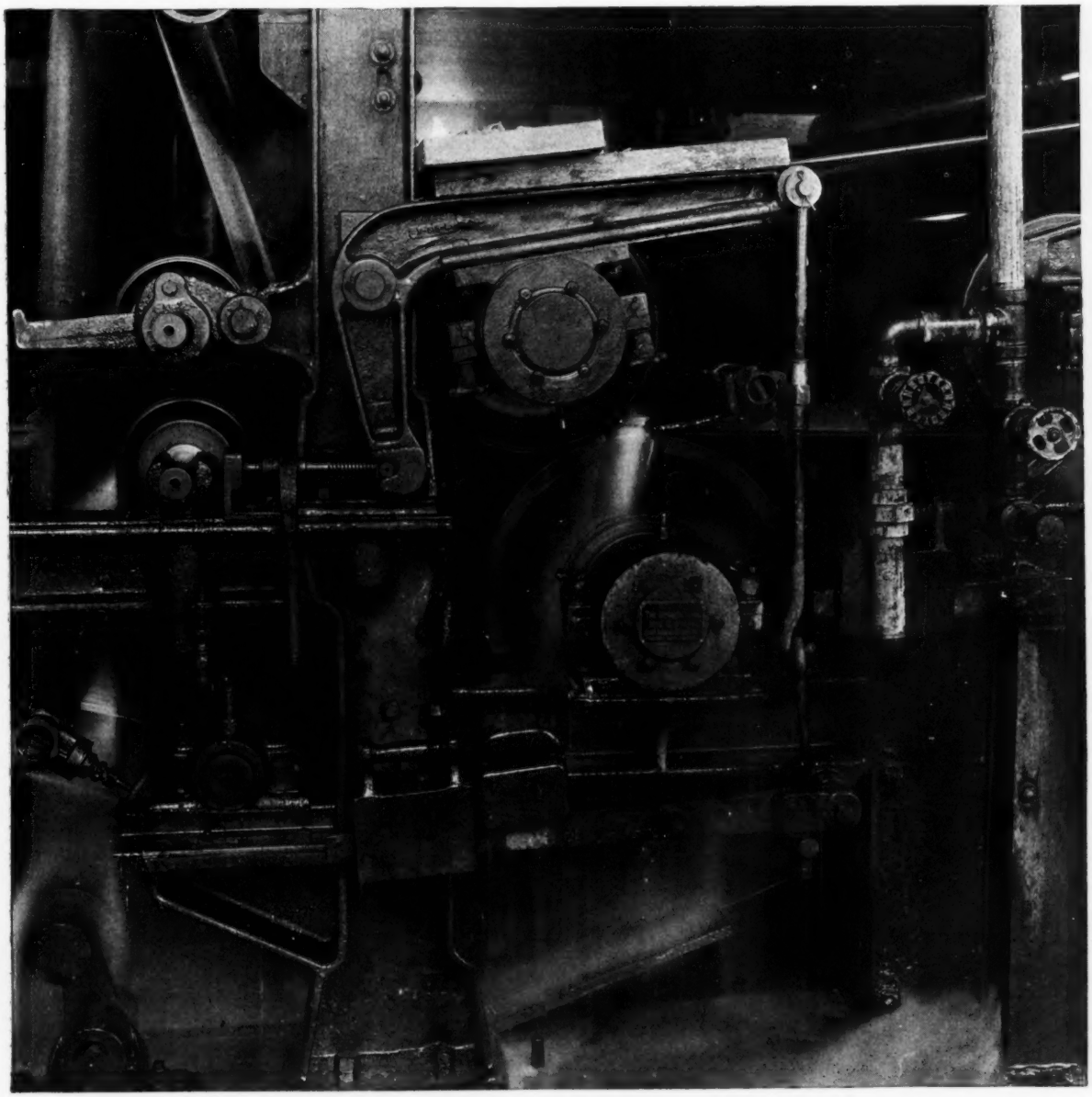
The reason for boosting these species, hitherto not so popular as the long straight grained Douglas fir, is that the province had discovered somewhat to its surprise that, unless something is done to halt the present rate of cutting, the mature Douglas fir forests will disappear within twenty years.

Hemlock, pine and cedar are valuable woods for certain purposes, and it is believed that if their utility becomes more fully known they will find an important supplementary place with Douglas fir in the markets of the world. If that can be accomplished, the Douglas fir business may be perpetuated instead of threatened with early extinction.

The exports of Douglas fir have grown in the past without the necessity for such salesmanship, according to the Hon. Nels Lougheed, minister of lands, who is now developing a trade expansion policy for the lumber industry. The Douglas fir forests were easy of access and the trees because of their great size, facilitated profitable production. Other species, however, less known to world markets, must be pressed into service to relieve the strain on the Douglas fir, according to Mr. Lougheed.

Something NEW for BOARD MILLS

What could you save by removing 1½ to 2 tons of water per ton of board before the board reaches the press part of your machine? We can prove that this is actually accomplished in mills using the Downingtown Extractor Roll, a new device for board machines. Other advantages are that it increases speed, saves power, saves steam, widens trim, eliminates suction boxes on bottom felt, increases life of bottom felt, stops felt picking, improves finish and firmness of sheet, increases bulk of sheet and improves pop test. For further information address the Downingtown Manufacturing Company, Downingtown, Penna.



Pennsylvania Paper Mills Are More Active

While Keystone State Plants Are Slightly Busier, Seasonal Schedule Being Maintained Is Far From Normal—Production Is Mainly Confined to Immediate Requirements Without Considering Future Demand—Paper Merchants Fairly Optimistic.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., May 18, 1931.—Looking ahead to betterment of the paper market and relying upon present business indications to warrant a more optimistic attitude, the Philadelphia trade is preparing confidently for the future. Steady prices and the absence of heavy cutting into values which has marked the current year's practice, gives the paper dealers a basis upon which to build for this more stabilized business future. Another indication is the returning consumer buyer who has larger orders to place than ordinary customers and who is now placing his orders instead of holding off, as had been the tendency for the past few months. These large buyers have taken the attitude, heretofore, that if they held off a while still lower prices would be available. The rise in prices of certain standardized paper grades has changed the opinion of such customers and they are now more eager to place orders, believing that quotations are to be advanced rather than reduced. This is not only true of buyers of kraft, but of purchasers of large orders in fine papers.

Bags and krafts, which have been the most drastically cut products in the wrapping paper division, are holding steady at advances recently made. Many of the more practical paper dealers believe that if the trade had held together in price stabilization, instead of having cut into values, there would have been avoided needless losses, for price cutting only created lack of confidence among big consumers who looked for large inroads on values and held up orders until the present time, looking for better bargains to the loss of the paper distributors. There is keen competition among the card board distributors, both in coated and mill blanks, with keen bidding for orders on volume prospects by the dealers and with inroads on values that are drastic. Tissues are weak and the recession in prices on sulphites in the past sixty days or so amounts to 5 per cent. Building papers are becoming more active in a seasonal market but prices are below pre-war days. Sanitary tissues are active and in fair demand, as the warmer weather creates broader markets.

While the manufacturers are experiencing a spotty buying market, the mills are kept more active, though far from the normal seasonal schedule. There are alternating weeks of broader operations and reductions in production, as manufacture is confined to needs and orders placed at this time without production for the future a consideration. Board mills are slightly advanced and container plants placed on increased schedule in a seasonal movement. Fine paper mills, too, have been increased on book and better grades of writing papers of fancy finish. The better grades of bonds show improvement in demand and cover papers keep pace with the movement.

Distributors report that buying is more active in outside markets, covered by the Philadelphia trade. City consumers, except among the volume buyers of book and certain grades of fancy finished writing papers, are not purchasers in the quantities that the surrounding territory consumes. It may be that the ability to obtain speedy deliveries of small orders, confines local buying to hand to mouth, while outsiders are stocking for the future. While sisals and jutes have been advanced the cotton twine market continues much disturbed at rock bottom prices. There is a broad advance in the soft and hard fiber twines of 4 cents per pound while jutes were increased 2 cents.

Waste Merchants Discuss $10,000 Bond

When the Philadelphia Wholesale Waste Merchants Association met at the Lorraine Hotel last week for the annual election of officers, there was a general discussion of the $10,000 Bond Bill, introduced at Harrisburg in the present session of the Legislature by Representative Schwartz, representing the Real Estate dealers of the State. The Schwartz bill would require all waste and junk dealers, including paper stock and rag, to be placed under a $10,000 bond as a guarantee against the disposition of goods secured by theft and sold to such dealers. The bond would include a requirement that all such dealers hold for thirty days all goods bought and make daily reports to the police department of all purchases made. While no action was taken by the association, various speakers took up the measure, which will be acted upon at a later session.

Wholesale Merchants Elect Officers

Annual election of officers followed the dinner of the Wholesale Waste Merchants Association, held at the Lorraine, with the following re-elected: president, Thomas A. Kenny, International Trading Company; vice president, Charles J. McNichol, P. De Santi Company; treasurer, William L. Simmons, John Simmons Sons Company; and secretary, William J. McGarity, Jr., Penn Paper & Stock Company. The following were made directors: Harry Bailey, Hemingway Paper Company; Dominic De Santi, Dominic De Santi Company; George French, Castle & Overton; Morris Harris, H. Feldman & Son; William J. McGarity, Sr., Penn Paper & Stock Company; William Lemly, William Lemly Company; and Samuel Ingber, Samuel Ingber & Co.

Paper and Twine Merchants Outing

Having previously selected June 25 for the annual spring outing, the Philadelphia Paper and Twine Association's entertainment committee, of which H. C. Newell is chairman, has chosen the Baderwood Country Club as the place, and this will be announced at the meeting to be held at the Adelphia Hotel on Friday. The speaker will be the assistant secretary of the Philadelphia Chamber of Commerce, Charles Summefield, who will talk on "Events of the Day In and Around Philadelphia," taking his audience through recent developments in the Quaker City business world and its enterprises, port, transportation and financial facilities. President William Edkin announces the enrollment of the Menasha Products Company, through the Philadelphia representative, George W. Sherburne.

Robert A. Batchelor Celebrates

This month will celebrate the 62nd Anniversary of association with the Philadelphia paper trade of Robert A. Batchelor, head of C. S. Garrett & Son Corporation, 20 South Marshall street, and veteran paper distributor now specializing in roofing and building papers. On April 22 Mr. Batchelor celebrated his 56th wedding anniversary. He began his paper trade career as an associate of Mac-

"CLEAN" and "SCREEN" Dovetail when you use a Harmon

Stock is *clean* when it passes the Harmon Inclined Screen,—for the two, "clean" and "screen", are as intimate as a well made dovetail joint. The Harmon positively delivers more and cleaner stock at lower upkeep and power cost than any other type of diaphragm screen.

Stock flows across the inclined screen plates of the Harmon freely and rapidly,—without agitation. The powerful downward draw of the diaphragm takes it through the plates directly; the following upward blast cleans the slots and prevents clogging. Dirt particles float off at the lower end, without raking or showers. Stock keeps moving, without slugs or slime, without plugging or overflow, without disturbance or turbulence.

The Harmon,—the pioneer inclined type screen—has proven the soundness of its basic principle since its first installation. Continued improvements in cam, plunger and diaphragm construction make it today the most economical and practical screen available, a sweeping statement but endorsed by the experience of mills that measure efficiency in terms of both quality and quantity.

Help your machines produce cleaner and better paper . . . back them up with Harmon Screens.

The Bagley & Sewall Co.

Watertown, N.Y.

Farland & Bros. and left that firm in 1875 to join the old established and pioneer firm of C. S. Garrett & Son as financial man. The old firm liquidated in 1912-13 and the present reorganized firm of C. S. Garrett & Son Corporation was formed by the present head of the firm in association with an old employee of the former concern, Nat Lemon, who later left the corporation to join Lindsay Brothers.

The personnel, then, was reorganized upon the return of Lieut. Wilton R. Cole from service in the World War, and he, with John F. Coffey, now make up the associates of the firm, with Mr. Batchelor as president.

Thomas M. Royal & Co to Exhibit

Displays of the various bags and sacks manufactured by Thomas M. Royal & Co., 7th and Grange streets, one of the largest manufacturers of cellophane paper bags and sacks of all description, will be a feature of the First Packaging Conference, to be held in New York this week at the Hotel Pennsylvania, from May 19 to 21 by the American Management Association. This First Packaging Conference is of national scope and will include representation of the leading manufacturers, packers, financial and other business interests of the United States.

Paper Trade Bowling Championship Games

The championship games of the Philadelphia Paper Trade League will be played this Thursday at the alleys, 9th and Market streets. The present standing of the League is as follows: Whiting Paper Company, first place, with a tie between the J. R. Howarth Paper Company and the D. L. Ward Company. The games on Thursday evening will be for the award of the Silver Cup for the champion team for the season 1930-1931, in the series of games having been played this winter.

American Writing Paper Co. Additions

Dealers in the American Writing Paper Company's lines have been stocking as entirely new papers four modish colors of Herculean covers. The shades now permanently added to the Quaker City dealers' stocks are radiant blue, copper, yellow and London grey. Both the J. R. Howarth Paper Company, Inc., and the Paper Merchants, Inc., will carry the complete line of Herculean covers. In addition to the complete standard lines in the various shades and gradings these firms will include fourteen fancy finishes that can be had in Herculean covers on very short notice at slightly higher cost than the antique.

Fire At Hemingway Plant

A spectacular explosion, followed by a six hour fire, wrecked the plant of the Hemingway Paper Company last Saturday, when equipment and paper stock in the building at 828 North Hancock street, were destroyed. The blast occurred in the early morning hours before dawn, the fire spreading rapidly throughout the front portion of the building, where hundreds of bales of paper stored away continued to blaze for hours, and spread throughout the four floors in the forepart of the structure.

The firm is one of the oldest in the city, having been founded in 1871 by William Hemingway and was conducted until a few years back by his son, Edward Hemingway now retired, who sold the business to the present owner, Harry Bailey.

Paper Men Abroad

A. Richard Hartung, of A. Hartung, Inc., 506 Race street, sailed last week for Europe, where he will tour the continent. Another paper trade associate who will sail in mid May is Morgan H. Thomas, president of the Garrett-Buchanan Company, who leaves on the next sailing of the *Leviathan* for a tour of Continental Europe.

Demand Expands in Indianapolis

INDIANAPOLIS, Ind., May 18, 1931.—Although business volume in the various paper lines is hardly what the trade would like to see, there is a continued optimistic note and a slight expansion in the demand. With slightly more production in the various industries, the paper trade is confident it will not be long before this expansion will be more noticeable in the paper trades. Not that sales are entirely absent for there are many sales and inquiries. However, the average order is smaller than it was, necessitating more delivery expense and more office expense per order. Dealers' stocks generally are low, but they are keeping them well balanced and are patterning their buying after that of the consumers. Prices generally are more settled than they have been.

The manufacturers in this state, consisting mostly of container and board factories, report a fair increase in volume. This increase is well scattered over a variety of industries and they declare the future is more optimistic than it has been for some time. Most of them are producing in fair volume, though, of course, not to capacity. The volume of sales is slightly ahead of last year.

Cellophanes and glassines are expanding somewhat as the summer season approaches. The same is true of paper specialties such as napkins, cups, plates and such merchandise. The retailers generally had permitted their stocks in these specialties to become nearly nonexistant and a short time ago found the summer season almost at hand with virtually no stocks. Paper towels; waxed and parchment papers are following the same general trend.

Small lot orders continue to constitute most of the fine paper business. There is keen competition for this business but the local jobbers say there is some business of consistent effort maintained to secure it.

Little change is seen in the building paper and roofing lines. Some increase is seen in the past week, the first for some time that had been conducive to the expansion of construction. Little labor trouble is expected in the building industry this spring.

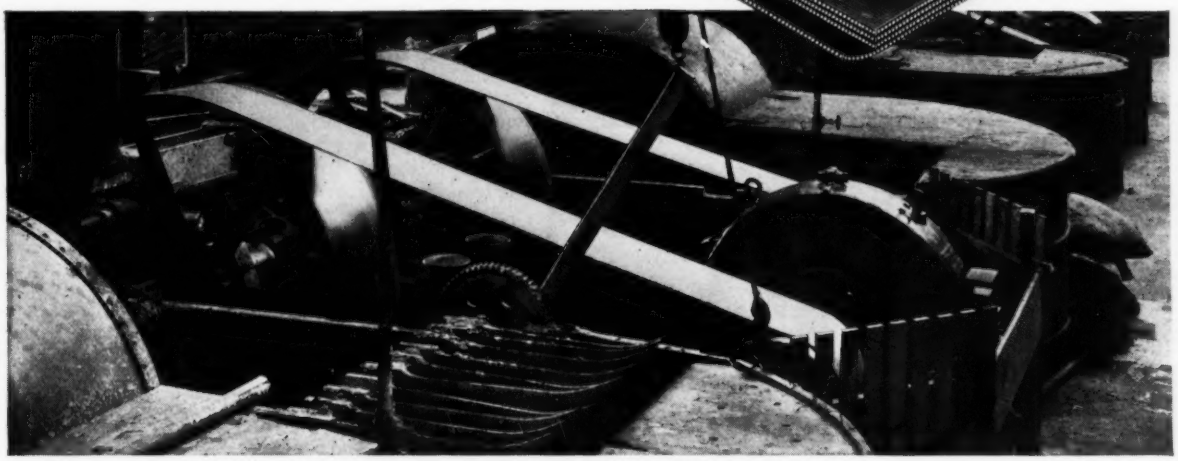
Chicago Paper Merchants Meet

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 16, 1931.—The regular meeting of the Chicago Paper Association was held at the Bismarck Hotel, on Tuesday evening, May 12. Included in the more important business discussed by the members of the association was the plan to employ a regular auditing concern to establish a uniform accounting practice in member houses of the Association. The suggestion was the cause of an interesting discussion concluding with a successful motion to appoint Earl Beier, of Beier & Co., to negotiate with the auditing concern—Wolf & Co.—as to costs of installing the system. The benefits to be derived from such an arrangement were brought out in the preliminary survey made by this organization some time ago. At that time the efficiency of an auditing system was clearly demonstrated. The association is in the hope that, if a permanent arrangement is affected, many of the leaks in the profit column will be averted

The association also gave consideration to the proposed organization of coarse paper salesmen. This move is going along in rather careful manner inasmuch as the consensus of opinion seems to be that while the organization is being effected it should be built up in a way to do the most good to the trade. Preliminary meetings being held by salesmen are expected to soon be turned into a definite program which will be presented to the board of directors of the Chicago Paper Association for definite action.

GOODYEAR MADE THIS THOR BELT



to whip the beater at its own game

Transmission belting can take a bad whipping on beater drives. Each new load of material puts a heavy strain on the belt. After a time these shocks break down the ordinary belt. The Goodyear THOR Belt was made for just this work — a shock-proof drive belt to stop the beater at its own game. Only silver-duck fabric is used — staunch at the fasteners. The plies are firmly buttressed with rubber of special Goodyear compound. A covering envelope, in sizes up to 16″, is a unique Goodyear development in transmission belting. There is no central seam to give way. The edges are guarded from fraying. The THOR Belt will take hold of that belt-hungry beater of yours and turn in a steady saving in belting costs.

The G.T.M. — Goodyear Technical Man — will show you the Goodyear THOR Belt in the new seamless construction. He will tell you about other Goodyear developments in Mechanical Rubber Goods —for instance, the new Goodyear Asbestos Cord Steam Hose. Have you ever heard of a steam hose that utilized asbestos? Let the G.T.M. tell you about it. Just write to Goodyear, Akron, Ohio, or Los Angeles, California, and ask him to call.

THE GREATEST NAME IN RUBBER

GOODYEAR

BELTS • MOLDED GOODS • HOSE • PACKING

New Steam Plant at Gatineau, Que.

One of the largest news print mills of the International Paper Company and its subsidiaries is the Gatineau, Quebec, plant of the Canadian International Paper Company, near Ottawa, Ont. This plant has been generating process steam with electric power obtained from its associated hydro developments, but due to expansion it has been necessary to supplement the hydro power with coal fired boilers. A new boiler plant has been designed by the engineering department of the Gatineau Power Company, under direction of R. H. Barber, general superintendent of steam plants, and J. F. Jackson, assistant engineer. Building construction and installation of equipment not installed by manufacturers was by Domill Construction Company of Canada, a Subsidiary of International Paper and Power Company.

The new plant has been built adjacent to the electric boiler room and contains four pulverized coal fired steam boilers. The plant is built to obtain maximum economical efficiency and is complete with coal handling and storage facilities. In addition to high plant efficiency, the outstanding features are compactness and simplicity of design. The plant contains the four largest steam generating units in the Dominion of Canada, but the boiler room is of only moderate height and has no basement. The over all dimensions of the boiler room are 51.5 feet high, 61 feet wide, and 193 feet long, including space left for the installation of a fifth boiler. Low height in the boiler room is obtained by a simple arrangement for removing ashes which eliminates the necessity of an ash basement, thereby reducing the building cost. Notwithstanding this compactness, every price of equipment is readily accessible for inspection and repairs.

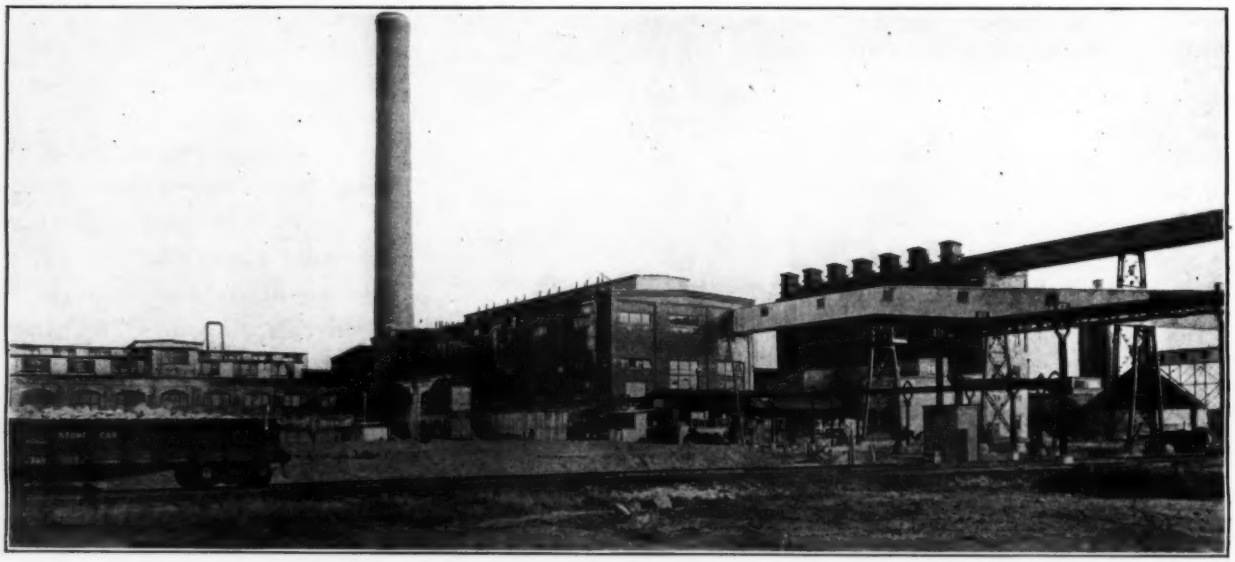
A cross section of the plant through the center of one boiler unit is presented herewith. Each unit includes pulverized fuel system, a 1340 hp. boiler, a water cooled furnace, convection super-heater, and tubular type air heater. The four units are served by a common flue connected through induced draft fans to a single radial brick stack, but each unit has its own forced draft fan.

Coal is received by rail, the cars dumping in a hopper which is emptied by a skip hoist, either into a chute to a drag line storage system, or into a ring crusher. The crushed coal is delivered by a belt conveyor to an overhead bunker in the boiler room. The coal on the belt is weighed automatically, so that a permanent record is kept of the total fuel burned in the plant. The bunker in the boiler room is of the "pant-leg" type, which is self trimming and contains no dead storage or excess weight. A further advantage of this type of bunker is that windows, placed between the lower portions of the bunkers, are very effective for admitting light and ventilation.

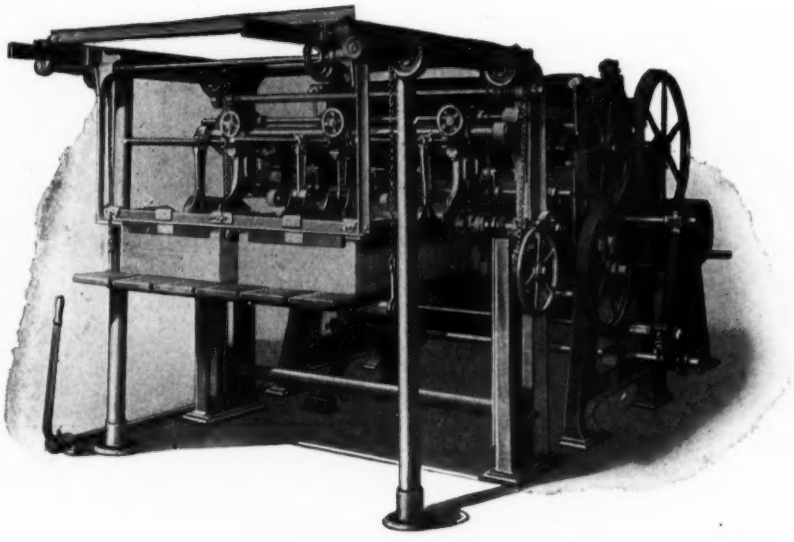
The overhead bunkers feed the three pulverizers of each boiler. The pulverizers are impact type, and are located on the ground level below the operating floor. Two of the pulverizers for each unit have a capacity of 7000 lb. of coal per hour and the third has a capacity of 3500 lb. per hour. These capacities are based on the usually high percentage of moisture contained in Dominion coal when stored outside during the winter months. Each pulverizer is driven by a direct connected motor. Two different sizes of mills are used to give maximum flexibility. The small pulverizer of each boiler is capable of carrying the week-end load.

Each pulverizer discharges through a single turbulent type forced draft burner. The three burners of each unit are adjustable for a high degree of turbulence and are placed in the front wall of the furnace at the operating floor level.

The furnaces are water cooled on three sides and have air cooled refractory front walls. The furnace volume is 6600 cubic feet which at normal maximum rating, provides a heat liberation of 22,600 Btu. per cubic foot per hour. The two side walls and rear wall of each unit are of the wing back construction, consisting of cast iron blocks bolted to the tubes. A water screen which prevents slagging of ash is located about five feet above the furnace floor. The volume of the furnace below the water screen is about 1800 cubic feet, which allows several days' accumulation



BOILER HOUSE—GATINEAU MILL



72-in. single Moore & White Lay Boy and Cutter.

Enlarging a "Bottle Neck"

WHERE sheets from a paper cutter are piled by hand, the limiting factors in the machine's output are the dexterity of the girl at the laying table, and the time that cutter is actually operated. Not only does the girl slow down the cutter when paper is running badly; but when she is tired the sheets are badly laid and sometimes must be scrapped. Also, it is necessary to shut down the unit periodically to remove paper from the pile, which when hand laid is only 9 inches high.

By putting Moore & White Lay Boys to work on your cutters, not only will you save a large part of the wages paid for a purely mechanical operation, but you will enhance the returns from your investment in the cutters.

Spoilage will be less.

Cutters can be operated more continuously, thus increasing total production.

Paper is piled to 36 inches high on standard Lay Boy. Higher piles can be laid if desired.

The tables are automatically lowered. When full, the piles are taken away by trucks, and fresh tables are put in their place.

Standard machines are built for sheet lengths up to 72 inches—longer if desired. Any width—any make of cutter.

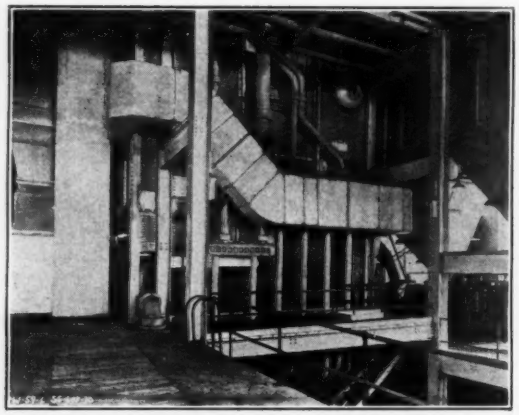
Full data on request.

THE MOORE & WHITE COMPANY

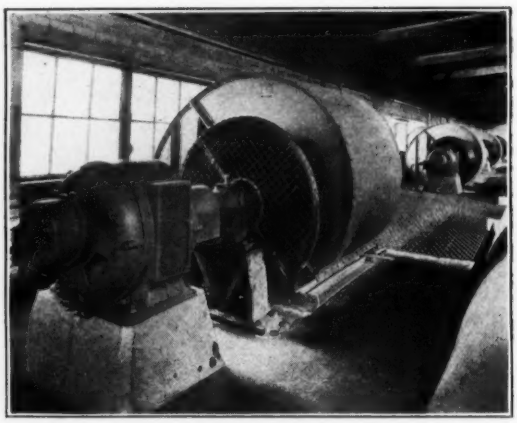
Established 1885

PAPER MACHINE BUILDERS

15TH ST. & LEHIGH AVE. PHILADELPHIA, PA.



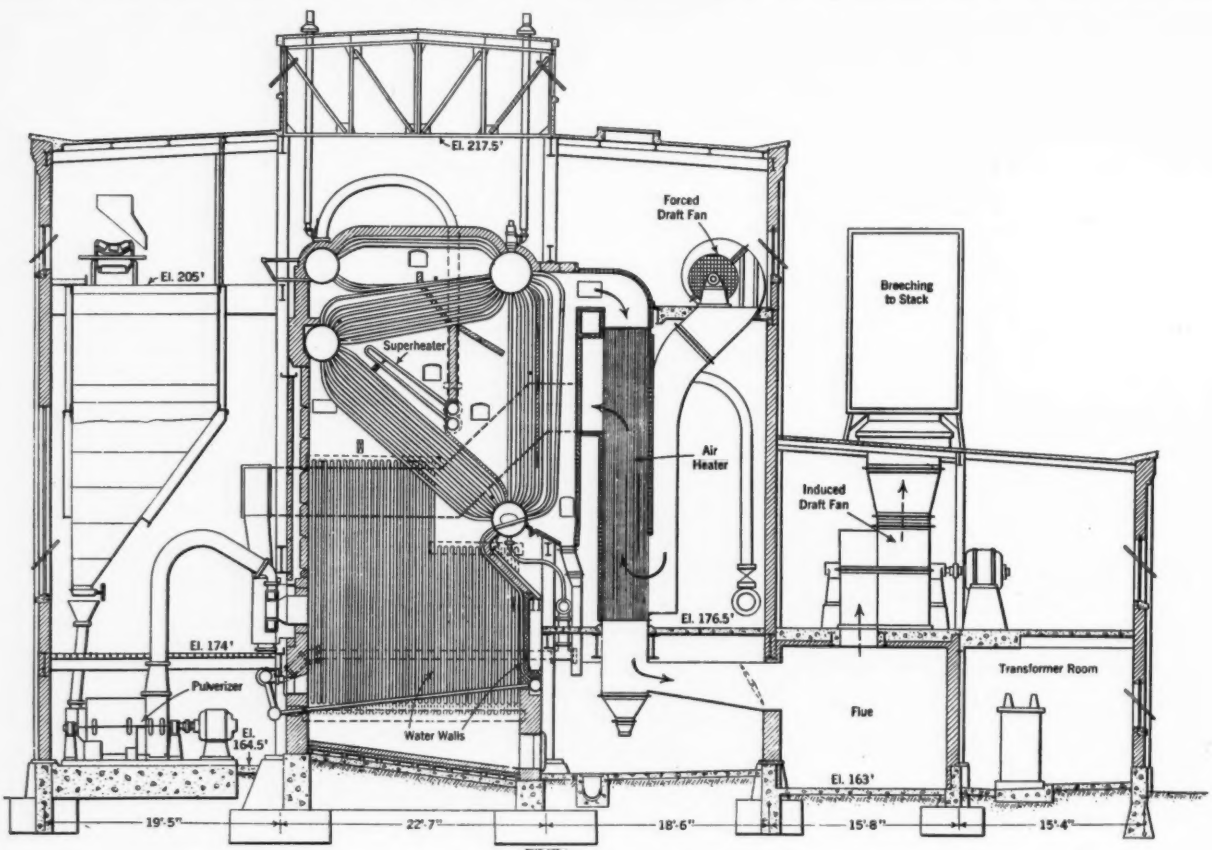
SIDE VIEW OF BOILER—AIR HEATER AT LEFT



FORCED DRAFT FANS

of ash before removal is necessary. The furnace floor is of firebrick and is air cooled. Ash removal is accomplished by means of a stream of water from a hose with a long pipe nozzle introduced through doors at the rear. The ash is washed out through these same doors into a "Hydrojet" sluice. To facilitate this washing process, the furnace floor slopes to the rear and has ridges of firebrick 4½ inches high from front to rear dividing the floor into four channels, each leading to one of the four ash doors. The sluice runs the length of the boiler room and continues to a sump outside, from which the ash is removed by a grab bucket to trucks, and the water is recirculated through the sluicing system.

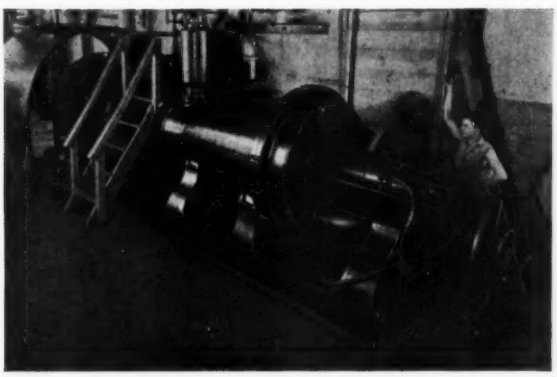
The furnaces described above fire 1340 hp. boilers of the bent tube type. The boilers are made up of four drums connected by 3¼ inch tubes. Gas flow thru the boilers is arranged in three passes, a bare tube convection type superheater being placed between the first and second passes. Normal working pressure of the units is 200 lb. per square inch. The boilers will generate 117,000 lb. of steam per hour at normal rating and are designed for a peak load of 136,000 lb. At the normal rating, the flue gas tempera-



CROSS SECTION OF BOILER HOUSE

Jones

A NAME THAT HAS WON A WORLD-WIDE REPUTATION THROUGH 75 YEARS DEVOTED TO PAPER-MAKING PROGRESS



Jones Leviathan Jordan—Largest in the World

Jones Jordans—For Dependable Performance

AVAILABLE in nine sizes, Jones Jordans are equipped with fillings to fit any kind of requirements. They are motor-driven, and most sturdily constructed. Can be furnished in either solid or split shell type, with banded or bandless plug. Permanent alignment of plug and shell is insured by the use of anti-friction bearings. We are prepared to furnish in non-corrosive metals all parts which come in contact with stock.

Further particulars gladly mailed upon request.

E. D. JONES & SONS COMPANY
PITTSFIELD . . . . MASSACHUSETTS

BUILDERS OF HIGH-GRADE MACHINERY FOR PAPER MILLS

ture will be 625° F. when operating with 14 per cent CO_2. At this rating, the steam is superheated 60°, a higher degree of superheat not being desirable inasmuch as the steam is used principally for process work. The only steam used for power is that delivered to the turbines operating paper machines.

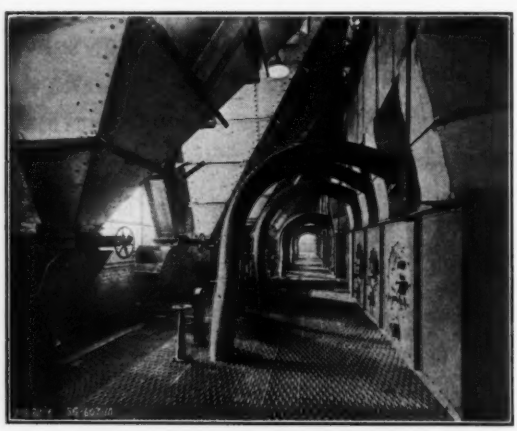
Flue gasses from the boilers are delivered to tubular type air heaters containing 17,820 square feet of heating surface. Gases from the air heaters flow to a common flue on the ground level. Three induced draft fans, located above the flue, deliver the gases to the stack. The forced draft fan for each unit is located on the upper floor of the boiler room, about 25 feet above the air heater inlet. This distance permitted construction of the connection duct without abrupt change of section, assuring even distribution of air across the full width of the heater. The air heaters are calculated to reduce the flue gas temperature from 625° to 340° F. and heat air for combustion from 70° to 415° F. Preheated air is used in the pulverizers for mill drying of coal, increasing the efficiency of the mills, the fineness of grinding and reducing the power required. Preheated air is also introduced as secondary air at the burners. It is estimated that these steam generators will have a continuous overall efficiency during normal operation of 82.5 per cent.

All control apparatus and instruments are mounted on panel boards located between each pair of boilers. It is possible to observe the boiler water level; also the flow of coal from bunkers to pulverizer feeders from the operator's position.

EQUIPMENT AT GATINEAU

Boilers and Coal Burning Equipment

BOILERS: Four 13,400 sq. ft. Kidwell bent-tube 3-pass, 878—3¼" tubes, 40 tubes wide. Canadian Vickers, Limited.
SUPERHEATERS: Convection type, bare tube. Foster Wheeler Limited.
AIR HEATERS: Four 17,800 sq. ft. tubular, 1134—2½" tubes, 42 wide, 27 deep. Foster Wheeler Limited.
PULVERIZERS: Aero impact type, three per boiler, two 7000 lb. per hour, one 3500 lb. per hour. Foster Wheeler Limited. Motors 150 hp. and 75 hp. 1150 r.p.m. variable speed, slip ring type. Crompton-Parkinson.
BURNERS: One per pulverizer, turbulent forced draft. Foster Wheeler Limited.
WATER WALLS: Wing back construction, side walls 33 elements 427 sq. ft. Wall coverage each side, rear wall 40 elements 280 sq. ft. wall coverage. Foster Wheeler Limited.
WATER SCREENS: 20—3¼" tubes, surface 189 sq. ft. Foster Wheeler Limited.
FRONT WALL: Air cooled refractory. M. H. Detrick Co.
SETTINGS: Exclusive of water and air cooled walls, 13½" first quality firebrick, 9" second quality firebrick. Atwood, Ltd.
FEED WATER REGULATORS: S-C. Swartwout Co.
SOOT BLOWERS: 12 per boiler. Vulcan Soot Cleaner Co.
BLOW-OFF VALVES: Yarway. Yarnall-Waring Company.
SAFETY VALVES: 5—4½" per boiler. Consolidated Ashcroft-Hancock Co.
METERS: Steam-flow air-flow type, flue gas temperature recorders. Bailey Meter Co. Draft Gauges. Bailey Meter Co. CO_2 Recorders, Ranarex. Permutit Company. Temperature Recorders. Bristol Company.



LOOKING DOWN FIRING AISLE—BURNERS AT RIGHT—OUTLET SECTIONS OF COAL BUNKER AT LEFT

AISLE AT FRONT OF BOILERS ON LOWER FLOOR. THREE MOTOR DRIVEN PULVERIZERS SERVE EACH BOILER

Draft Equipment

FORCED DRAFT FANS: One double inlet fan per boiler, capacity of each 50,000 cubic feet per minute, at 8" static pressure. B. F. Sturtevant Co. of Canada, Limited. Motors, 100 hp., 1150 RPM., variable speed, slip ring type. Crompton-Parkinson.
INDUCED DRAFT FANS: Three, single inlet fans with bolted wheel construction and renewable cast iron liners in casing. Capacity of each, 135,000 cubic feet per minute at 5½" static pressure. B. F. Sturtevant Co. of Canada, Limited. Motors 250 hp., 600 R.P.M., variable speed, slip ring type. Crompton-Parkinson.
DUCTS AND BREECHING: Steel plate construction. Foster Wheeler Limited.
CHIMNEY: Radial brick, 15 ft. diameter, 200 ft. high. H. R. Reinicke, Inc.
INSULATION: Atlas Asbestos Co.

Coal and Ash Handling Equipment

COAL BUNKER: 3/16" Steel Plate, capacity 175 tons per boiler. Canadian Vickers, Ltd.
BELT CONVEYOR: 24" belt, roller bearing idlers. Link Belt, Ltd.
SKIP HOIST: Double bucket balanced, capacity 140 tons per hour. R H. Beaumont Co.
DRAG SCRAPER: Bucket capacity 5000 lb., movable back post car. R H. Beaumont Co.
CRUSHER: Ring type, capacity 140 tons per hour. American Pulverizer Co.
WEIGHTOMETER: Merrick Scale Co.
CAR PULLER: Silent Hoist, Winch and Crane Co.
MOTORS: Canadian General Electric Company.
SLUICE: Hydrojet sluice. Allen-Sherman-Hoff Co.
PUMP: Re-circulating 1200 GPM, at 240" head. Canadian Ingersoll-Rand Co., Ltd.
DERRICK: Steel stiff-leg with double drum, electric hoist and 1 cu. yd clam shell bucket. Canadian-Mead-Morrison Company.

Piping

ERECTION: Domill Construction Co. of Canada.
FABRICATION: Crane Co., Ltd.
VALVES: High Pressure. Walworth Company. Non-return. Edward Valve & Mfg. Co. Low Pressure. Jenkins Bros. Ltd.
FITTINGS: Steel. Walworth Company.
INSULATION: Atlas Asbestos Co.

Miscellaneous

BOILER FEED PUMP: 6"—3-stage, direct connected to Terry Steam Turbine. Canadian Ingersoll-Rand Co., Ltd.
VACUUM CLEANER: Allen and Billmyre Company.
CONTINUOUS BLOW-DOWN: Henszey Deconcentrator Company.
FLOW METERS: Republic. Dominion Flow-Meter Company.

Electrical Equipment

MOTORS: Crompton-Parkinson, Canadian General Electric Co.
MOTOR CONTROL: Allen West, Limited; Canadian General Electric Co.; Canadian Westinghouse Company; The Rowan Controller Company.
TRANSFORMERS: 4—700 KVA. single phase, water cooled, 6600/500 volt. Ferranti Electric Company.
OIL SWITCHES: Canadian Westinghouse Company.

Building

MASONRY: Red brick, 12" walls, 2" gunite roof with tar and gravel covering. General Contractor—Domill Construction Co. of Canada.
PILING: 20" concrete. Raymond Concrete Pile Co.
STEELWORK: Canadian Vickers, Limited.
SASH: Steel. David Lupton's Sons, Company.
GRATING FLOORS: Irving Subway Type M. Crowe's Iron Works, Ltd.

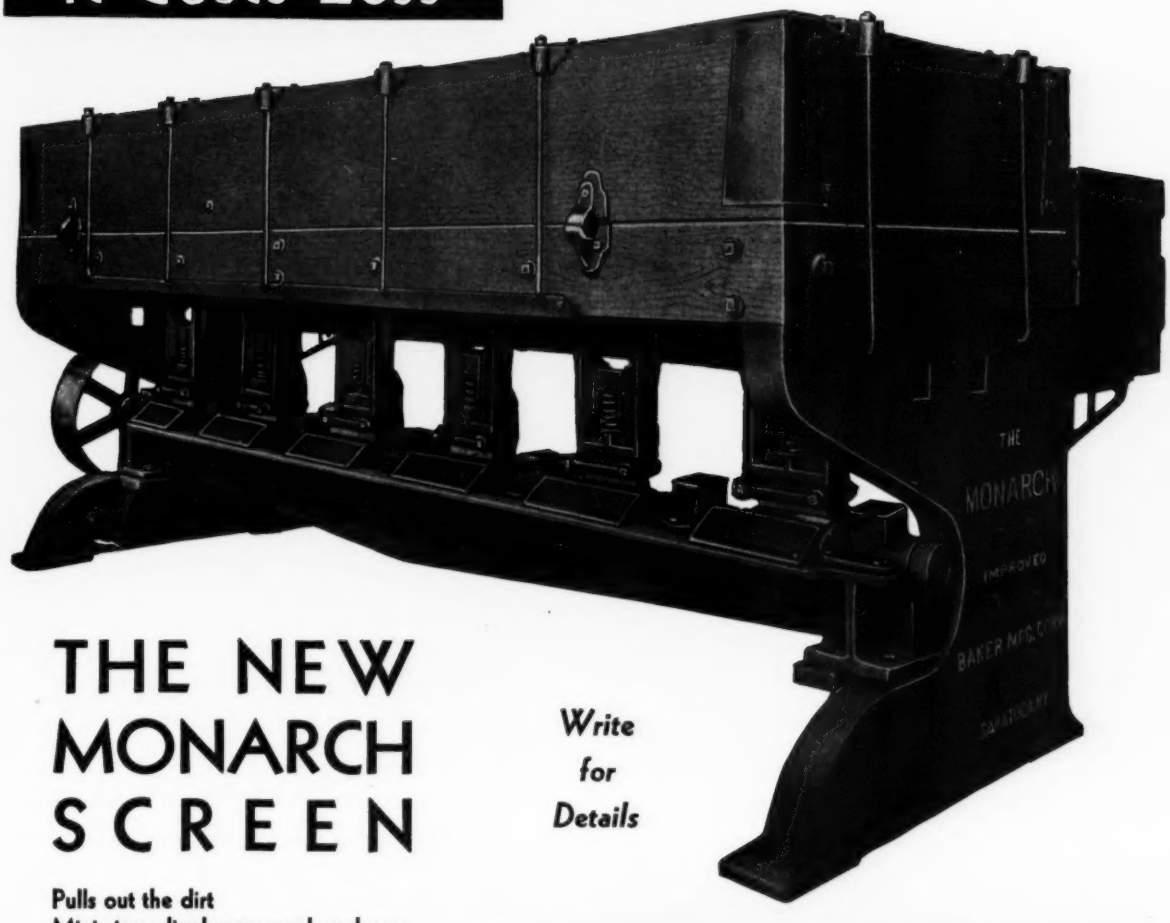
Swedish Paper Shipments Lower

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 20, 1931.—Swedish exports of paper and board have equally suffered during the past quarter, with the heaviest declines being registered in news print and sulphite wrappings, ground wood, unbleached sulphite pulp, and boards. Bleached sulphite pulp also declined by 13 per cent, and there was a fall in shipments of kraft wrappings of 11 per cent, but kraft pulp on the other hand was greater by 7 per cent than in the corresponding quarter of 1930.

IF IT'S
BAKERMADE
Eventually
It Costs Less

New type plunger and diaphragm control eliminates side play and minimizes diaphragm wear. The NEW MONARCH runs like a sewing machine.



THE NEW
MONARCH
SCREEN

Write for Details

Pulls out the dirt
Minimizes diaphragm crack and wear
No uneven cam movement
No loosening bolts
Special Baker alloy guides — accurately machined
Plunger movement unfailingly even
Shoe held firmly; cannot move sidewise
Block troubles unknown

Its FIRST COST
is its LAST COST

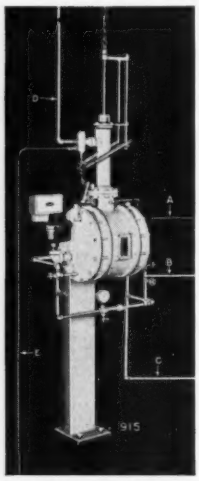
THE
BAKER
CORPORATION
«
SARATOGA SPRINGS, N. Y.

27

New Pulp and Paper Mill Equipment

New Beater Stock Recorder

The Meyers-Mesco Beater Stock Recorder, manufactured by the Merritt Engineering & Sales Company, Inc., of Lockport, N. Y., is operated by air pressure. Two small brass pipes project vertically into the stock on opposite sides of the mid-feather at the in-feed end of the beater. A very small quantity of air is admitted to the tops of these pipes. Their bottoms are fully open and excess air escapes by bubbling up through the stock. The air pressures within the pipes equal the hydrostatic heads outside the pipes. These air pressures are transmitted to the recording instrument and into the chambers of mercury manometers having steel floats. The float movements are transmitted to the pen by simple linkage.



Patented June 16, 1931

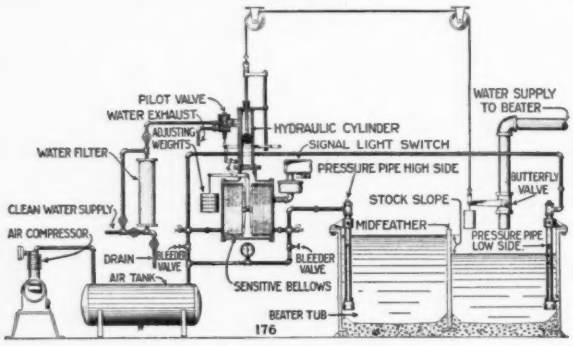
One manometer is differentially connected to both pipes and the pen records the difference in elevation of the stock at the two points in the beater tub. The other is connected only to the pipe at the higher stock level. Being operated by air, the instrument has no moving parts and its construction is extremely simple. The use of a manometer for measuring air pressure makes it operation absolutely reliable. The slightest change in conditions in the tub is recorded as to time, duration and magnitude. Quality and uniformity of stock are insured because the operators know what is transpiring in the beater.

The charts give a graphic history of the complete beating operation, supply data for holding all beaters to identical standard specifications and furnish a dependable formula for the exact duplication of orders. As stock circulates around the tub of a beater, it assumes a natural hydraulic gradient due to diffences in height of stock on opposite sides of the mid-feather. This differential in hydraulic levels reflects the nature and condition of the stock and is a function of consistency.

In batch beating with constant consistency, any variation in the flow conditions within the tub, as shown by changes in levels, is due to: a. addition of paper making materials, either fibrous or chemical; b. Progressive changes in freeness as reflected in hydration and fiber conditions. The problem is to secure a true record of these variations.

The Meyers-Mesco Beater Stock Recorder is a highly sensitive air operated device which, by means of two recording pens, indicates and records on charts, hydraulic levels at two given points within the tub. Any variation from a constant condition within the beater is faithfully and accurately recorded, whether it be due to the addition of materials or to increase in slowness. Thus the departure of the recorded graph from a true circle affords an exact history of a. Addition of materials; b. Time of addition; c. Changes in freeness.

The practical value of the instrument lies in its ability to indicate the rate of progress of the beating cycle, the time at which the charge should be dropped, and to furnish records that will enable the operators to make up one beater charge identical with every other. Accurately recorded graphical records are important in any industrial activity and pulp beating is no exception.



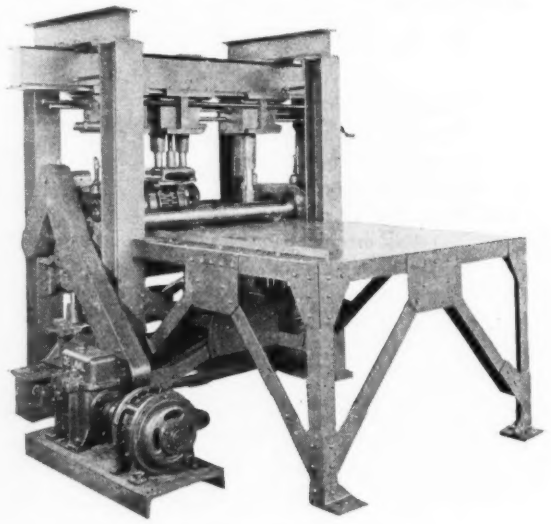
BEATING CYCLE

Root Ship-Lap Sawing Machine

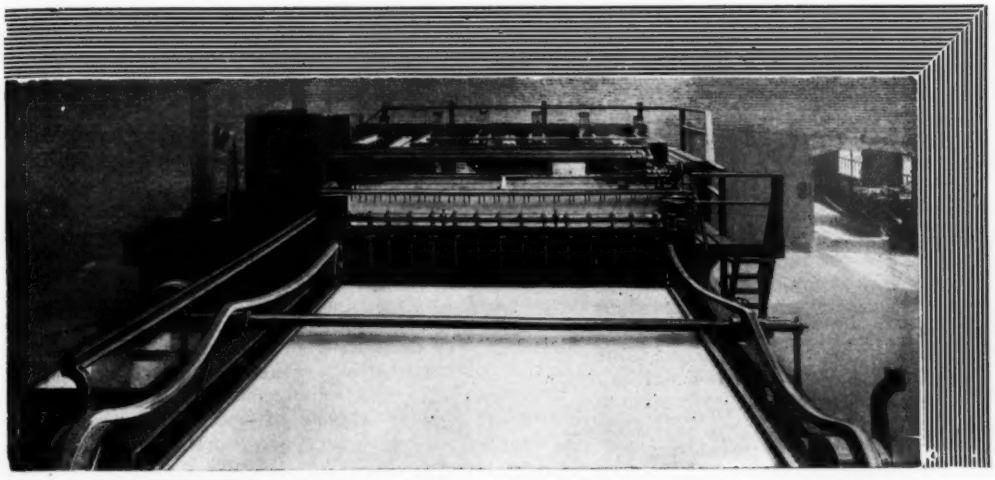
The new Root Ship-lap Sawing machine, made by the B. M. Root Company, of York, Pa., has just been announced to the wall board trade. The purpose in the design of this machine is to permit square or rectangular sheets that have been trimmed and cut to further be grooved, Ship-lapped, beveled or resawed. A point of merit incorporated in this type machine is that material of any length may be ship-lapped, beveled or sawed.

This machine is specially designed for shaping insulation building board and products manufactured from wood fibers, paper or pulp boards, or any other similar sheet materials that can be grooved, beveled or ship-lapped with saws, cutter-heads or grinding wheels.

All rolls are solid steel, turned, ground and polished. They are all driven by multi-speed motors through worm gear reducer. The roll bearings are of the roller type, and totally enclosed. The upper roll bearings are mounted on rocker arms, and swing in the direction of the travel of the sheet, and are fulcrumed in such a way as to allow of free rise and fall of the upper rolls as the sheets move through the machine. Top roll pressure, in addition to the weight of the roll, is provided by adjustable spring pres-



SHIP-LAP SAWING MACHINE



One of 299 installations of the Voith Inlet among 148 mills.

DON'T WAIT

. . . . . *until you HAVE to change*

Builders of the

VOITH

and

VAN DE CARR

Stock Inlets

Your inlets have much to do with the *cost* and *quality* of your papers.

If you haven't the most modern, efficient inlet equipment—don't put off making improvements until the rapid advance of progress *forces* you to do so.

Only low cost mills will survive. The paper market makes no sympathetic allowances for high-cost mill conditions or inferior quality standards.

We have had extremely wide experience with practically every type of Inlet problem, and should be glad to discuss your own problems with you. Write the Valley Iron Works Co., Appleton, Wisconsin.

VALLEY

Equipment for Paper and Pulp Mills

Plant: Appleton, Wis.
New York Office: 350 Madison Ave.
Canadian Representatives: Pulp & Paper Mill Accessories, Ltd., Montreal, Canada

sure, and can be varied to suit the density of the material to be cut.

Spacing of the rolls on this machine is adjustable for sheets $\frac{5}{16}$ inch minimum and $1\frac{1}{8}$ inch maximum thickness. These dimensions however can be decreased or increased to suit the customer's requirements. Provision is made for easy and quick adjustment of pressure and spacing rolls.

Each saw is individually and directly motor driven, each motor and saw being mounted on cast iron base provided with individual vertical and lateral adjustment, said adjustment being controlled from centrally located control panel. For lateral movement all motor units are mounted on heavy machined steel bed, parallel with, and extending the length of the feed rolls.

Mechanism for vertical adjustment of each unit, consisting of cut gears, raising screws, guide shafts and ball thrust bearings, is totally enclosed within the base casting, thus protected from dust and chips.

Motor is 2 h. p., 3600 r. p. m. totally enclosed, fan cooled, ball bearing, 40 degrees continuous rating, with top flatted off allowing maximum projection of 10 inch saw blade above motor. With this type motor minimum width of cut is 18 inches. If less is desired, semi-enclosed motors can be provided which will allow minimum cut of 16 inches.

Motor shafts are extended with end threaded, to receive saw blade, cutters, clamping collars and nut. Shaft is of ample diameter to support the rotating parts, thus eliminating any tendency to whip or vibrate with consequent inaccuracy of cutting and grooving.

Style "SL" is the symbol of the machine when used for ship-lapping, beveling and grooving. When desired to cut narrow strips it may be equipped with a long ball-bearing saw arbor driven through flexible coupling by a motor mounted on motor stand.

Root style "S" Sawing machine is designed primarily for sawing. It may be motorized with individual motors for each saw. Or when it is desired to cut narrow strips with saws on close centers, it is equipped with a long ball-bearing saw arbor which is driven through flexible coupling by a motor mounted on a motor stand. The style "S" machine may be used for grooving where the grooves are all on one side of the sheet.

Both the Style "SL" and "S" machines are made in width capacities of 3 feet, 4 feet, 5 feet, 6 feet standard sizes. It may also be built in 8 feet, 10 feet, and 12 feet width capacities on order. Allowances in all cases are made for edge trim. The machine will handle any length of material. The height from floor to table top is 3 feet. The approximate floor space of a 6 foot machine is 9 feet width by 8 feet length.

Small Generator Units and Their Application

Small Generator Units and Their Applications, a new 12-page publication identified as Circular 1908, is announced by the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa. In it are described four different types of generators used where a small amount of electrical energy is necessary, but where no central station supply is available. These generators are discussed first from an apparatus and then from an application standpoint. Fifteen kilowatts is arbitrarily chosen as the limit of the small generator class.

The four types of generators described are: belt-driven generators, turbine-generator units, portable gas-engine-driven power units, and electric service plants (internal-combustion-engine-driven generators which are connected in parallel with storage batteries and the loads). On the last page appears a table of specifications covering the various sizes of each type of generator.

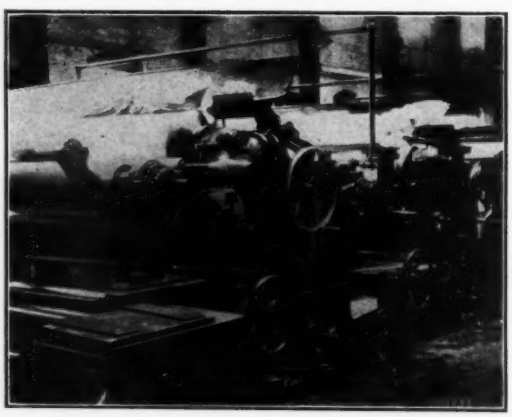
The publication includes information concerning the following applications of these generators: outdoor construction, marine, small industrial plants, central stations, and emergency lighting.

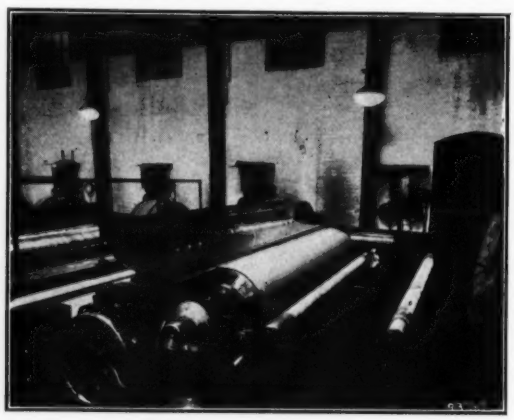
Micarta Doctor Blades

By W. E. Brindley, General Engineering Dept.
Westinghouse Electric & Mfg. Co.

Micarta, a molded laminated material manufactured by the Westinghouse Electric and Manufacturing Company, has proven extremely satisfactory for doctor blades for press roll applications. The purpose of the blade is to clean the press calender and dryer rolls of excess pulp and prevent it from ruining the paper and eliminate the possibility of doing damage to the rolls. Many kinds of materials have been tried with varied success. Some of the common non-metallic blades become warped and pitted to such an extent that felt wipers are necessary. These are placed over the rubbing edge to insure proper cleaning and consequently must be replaced frequently. Other types of non-metallic doctor blades are subject to warping, cracking or chipping which renders them troublesome and costly to maintain.

Micarta doctor blades, being impervious to pulp solutions containing weak acids and alkalis, do not present such difficulties. Also, the extreme strength and peculiar bending and deflecting properties of this material under pressure, insures uniform contact along the entire length of the blade. The wearing qualities are exceptional as indicated by the many representative installa-





A Typical Micarta Doctor Blade on a Press Roll at the Tyrone Plant of the West Virginia Pulp & Paper Co.

SPECIFY THEM FOR ECONOMY

Longer, efficient life and lower ultimate cost make Kellogg boiler drums an economical specification. The economy of Kellogg drums is demonstrated by 150 of these units in operation.

Kellogg's new Masterweld boiler drums can be fabricated from seamless rolled steel cylinders or from special welding quality plate. Both types of drums are built exactly in accordance with the proposed A. S. M. E. boiler construction code.

Kellogg Masterweld drums have the characteristics of solid forged units...great strength and reliability...freedom from laps, riveted butt straps and internal strains. Drums fabricated from seamless rolled steel cylinders have no longitudinal seams.

The smooth, homogeneous structure of Kellogg Masterweld boiler drums and the complete absence of strained sections render them immune to caustic attack. Kellogg drums are available for the highest pressures.

Write for complete details.

THE M. W. KELLOGG COMPANY, 225 BROADWAY, NEW YORK

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Los Angeles ..... 742 Western Pacific Building
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Birmingham ..... 827 Brown-Marx Building

DUCTILE

KELLOGG *Masterweld*

TOUGH

Kellogg Products include Masterweld Digesters, Boiler Drums, Receivers, Separators, Headers and Complete Power Plant Piping

tions which indicate that a life of 4 or 5 years can be expected. The Brinnell hardness being much lower than steel or brass insures a minimum amount of wear on the rolls.

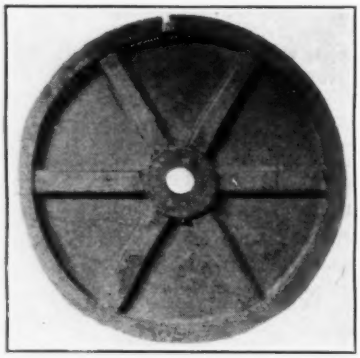
This material may be supplied in any size or thickness and may have either straight sawed or beveled edges. The use of a one-piece blade reduces the mounting difficulties thus presenting an even, unbroken wearing surface.

The uniform wearing characteristics, combined with extreme life, make Micarta very desirable for doctor blade applications.

New All-Welded Rolled Steel Gear Blank

Lukenweld, Inc., of Coatesville, Pa., (Division of Lukens Steel Company), which is primarily engaged in the design and manufacture of welded steel assemblies for machinery and equipment, has developed and is now manufacturing all-welded rolled steel gear blanks for use in the manufacture of cut gears. This gear blank is the culmination of a considerable period of research and experimental work, and patents on the blank have been applied for by Lukenweld, Inc.

The welded steel blank, which can be employed in the manufacture of spur, herringbone and helical gears, can be



WELDED STEEL BLANK

made any size from 24-inches outside diameter up. The largest all-welded gear blank made up to the present time is one with a shipping weight of 4,350 lbs. It is of 66-¾ inch outside diameter, 11-¾ inch width of face, 4-⅛ inch thickness of rim, and 22-½ inch diameter hub.

While the all-welded gear blanks are ordinarily made entirely from S. A. E. 1020 carbon steel, the rims can be furnished in steels of special analyses if desired.

The hubs of the all-welded gear blanks are first gas-cut from solid rolled steel of the thickness to give the desired hub diameters. The webs are gas-cut from rolled steel plate, as are the ribs, the latter being formed into channels of the required section. The webs are arc welded to the hubs, and the reinforcing channels are welded to the web structures. The final operation consists of the circular bending of the gear ring, and arc-welding in position to form the finished gear blank. Before shipment, all of the welded gear blanks are carefully and thoroughly annealed, under pyrometric furnace control. Welding operations are under rigid procedure control and in accordance with insurance welding practice.

In the manufacture of all-welded gear blanks, no patterns are required, as the gas-cutting and arc-welding are done with blueprints of the gear design as the guide. This feature, in addition to elimination of the pattern cost, permits prompt manufacture and shipment, since no time is required for pattern-making. This time-saving is an important advantage in filling requirements occasioned by gear breakdowns.

The major advantages of the all-welded gear blank, however, from the standpoint of both the gear manufacturer and the gear user, are the purity and homogeneity of the thoroughly-annealed rolled steel from which the gear blanks are made. Rolled steel, as is well-known, is characterized by marked freedom from blow holes, gas pockets, hard or spongy spots and other defects. The gear rings, therefore, can be uniformly cut, and the cut teeth are sound in structure. These features minimize the losses of machining time, labor and gear material which might otherwise be caused by defects in rings discovered only after considerable cutting work had been done, frequently causing the scrapping of partially-cut gears. Moreover, the life of hobs and other gear-cutting tools is said to be increased because of the tendency towards less wear in cutting on sound and homogenous rolled steel.

Motorized Countershafts

Some very interesting individual motorization applications have been made recently by the Production Eqiupment Company of Cleveland on old type machine tools. These tools have all been single or cone pulley driven. Usually, from overhead line shafting drives.

The Motorized Countershaft manufactured by this company is made with an overhung base and box type base, thereby providing standard type mountings which can be adapted to most any kind of machine.

One of the many definite advantages of the Motorized Countershaft is its ability to speed up production on the machine and turn out work that is better in quality.

An installation on a 48 inch lathe reduced the hours of shaft turning on one job from 120 to 65. While all applications will not reduce the working time so much, it is certain that this practical improvement made to a machine will provide many advantages.

A new bulletin issued by the manufacturer describes many of the features of this equipment and illustrates a few applications.

New Asbestos Packing

Greene, Tweed & Co., of 109 Duane street, New York, have brought out a new packing, known as Super-Cutno, which is made of a grade of asbestos and lubricated with a compound which resists the very severe action of sulphuric, nitric, and other corrosive acids, especially at elevated temperatures.

Super-Cutno packing is meeting with quite a success in the paper and pulp industry, where it is used on pumps handling caustic soda and other similar acids.

New Schutte & Koerting Bulletin

The Schutte & Koerting Company, of Philadelphia, Pa., have just published a new bulletin, which covers in a comprehensive manner their lines of Spray Nozzles. The nozzle described in this booklet include a complete line for operation over a wide range of pressures and capacities. These nozzles produce flat or conical sprays, varying from finest atomization to coarse drops. The bulletin is profusely illustrated.

Solid Injection Diesel Engines

"Ingersoll-Rand Solid Injection Diesel Engines" is the title of a new bulletin just issued by Ingersoll-Rand Company, 11 Broadway, New York City. It discusses the advantages of Diesel power and contains a general description of I-R Diesels ranging from 150 to 1,200 hp. A copy of this bulletin will be sent free on request.

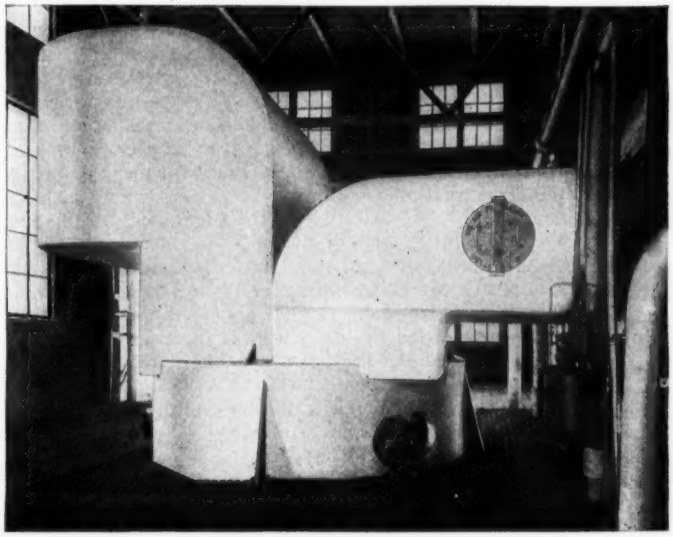
TYRONE PLANT, WEST VIRGINIA PULP & PAPER CO.

—where 600-lb. 750-deg. steam has fulfilled high expectations

LJUNGSTROM-PREHEATER-EQUIPPED

WHEN the Tyrone, Pa., plant of the West Virginia Pulp and Paper Company stepped out from a scant supply of 180-lb. saturated steam and put in two new 8460 sq. ft. pulverized-coal-fired boilers to deliver 100,000 lb. or more of 600-lb. 750-deg. steam per hour, Ljungstrom Air Preheaters had already made a remarkable showing on the boilers of the Company's plant at Covington, W. Va., and were specified as a vital essential for high efficiency and high economy. The company's new plant at Piedmont, W. Va., will also be similarly equipped.

The two Ljungstrom Preheaters at Tyrone reduce the temperature of the stack gas from 600 to 300 deg., raise the combustion air temperature to 550 deg., and as the steam demand fluctuates widely, they add much to the capacity in the peak periods, make very substantial fuel savings, particularly under the smaller loads, and provide smoother operation under *all* conditions. The excellent performance is due largely to the amount of heat injected from the Ljungstrom Air Preheaters, and to the quicker and more complete fuel combustion produced by means of this heat.



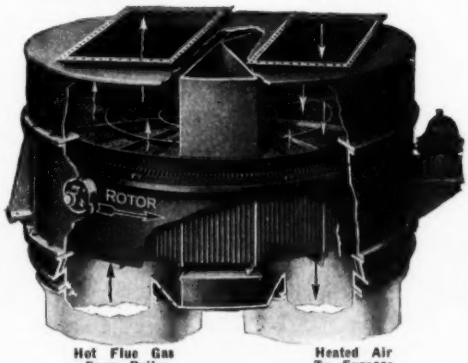
One of the Ljungstrom Air Preheaters at the Tyrone Plant, West Va. Pulp & Paper Co. This preheater is of the type shown below, for use with independent forced-draft and induced-draft fans.

Owners of paper and pulp mills who let stack gases leave at ordinary temperatures can not only recover 70 per cent of this serious heat loss, but with the Ljungstrom Regenerative Preheater can do so with substantial *net cash* benefit either as a marked capacity increase at very low cost, as a 10 to 15 per cent fuel saving, or as a desirable combination of both.

The Ljungstrom Preheater increases capacity as positively and dependably as additional boiler and furnace units, but in many cases at less than half the cost. Any plant using much steam 24-hr. per day and operating with cold combustion air, can make a Ljungstrom Preheater repay its installation cost complete within one or two years, and thereafter get a *net cash* annual return that shows up as a most gratifying item on the profit side of the operating records.

Cooled Flue Gas To Induced-Draft Fan

Cold Air From Forced-Draft Fan



Hot Flue Gas From Boiler

Heated Air To Furnace

Type CANX for use with independent forced-draft and induced-draft fans. Operated with rack-and-pinion drive, and has a center thrust bearing in the cold air side of the top housing. For boiler units of 1000 hp. and over.
Other vertical types with integral forced-draft and induced-draft fans.
Also made in horisontal types with or without integral draft fans and especially desirable for handling extreme gas temperatures.

Let our Engineers co-operate in working Ljungstrom Preheater benefits into your new boiler equipment or in making the old more profitable. We guarantee performance improvement in definite dollars-and-cents figures.

The Air Preheater Corporation, 40 E. 34th St., New York
Works: Wellsville, N. Y.; Agents in

Boston, Buffalo, Chicago, St. Louis, Charlotte, Detroit, Philadelphia, Cleveland, Indianapolis, Minneapolis, New Orleans, Pittsburgh, Cincinnati, San Francisco, Tacoma, Kansas City, Ft. Worth, Houston, Denver, Salt Lake City, Los Angeles, Portland, Spokane, Seattle. Canada: Lammers & Maase, Ltd., Montreal and Vancouver

Ljungström AIR PREHEATER
REG. U.S. PAT. OFF.
CONTINUOUS REGENERATIVE COUNTERFLOW

Obituary

Dr. Clarence W. Campbell

BEACON, N. Y., May 15, 1931.—Dr. Clarence W. Campbell, vice-president and general manager of the Dexter Sulphite Pulp and Paper Company, died here today in a sanatorium. He was fifty-seven years old.

Dr. Clarence Wellington Campbell was born in New York City on December 7, 1873, the son of Charles Edward Campbell and Mrs. Eugenia Gillespie Campbell. He studied for two years in Yale University and later was graduated from the College of Physicians and Surgeons.

After practicing medicine for a year, Dr. Campbell went into business. He was vice-president of the Dexter Sulphite Pulp and Paper Company, of Dexter, N. Y.; vice-president of the Howland Bag and Paper Company; president of the Dexter and Northern Railroad Company; president of the First National Bank of Dexter, and first vice-president of the Jefferson County National Bank of Watertown, N. Y. Dr. Campbell also was a director of the House of the Good Samaritan Hospital of Watertown.

Edward Park Cameron

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 18, 1931.—The pulp and paper industry of Canada has lost a devoted servant in the death of Edward Parke Cameron, director of the Division of Pulp and Paper of the Forest Products Laboratories of Canada in Montreal. He was in his 38th year and died at the Montreal General Hospital on May 11.

He was a graduate in Chemical Engineering of McGill University and entered the service of the Dominion Government in 1920. In 1925 he developed among leaders in the pulp and paper industry the idea of concentrating activities in a modern research institute which would act as a central laboratory for the solution of those problems which would help the industry as a whole.

The Pulp and Paper Association lent its full support, and the co-operation of the Government being secured, Mr. Cameron was largely instrumental in combining the forces of McGill University, the Pulp and Paper Association, and the Department of the Interior in an enterprise which has already redounded to the credit of Canada.

There stands today on the university grounds as the first fruits of this idea, a building which has often been described as the best equipped pulp and paper research laboratory in the world. Aside from its chemical laboratories, the Institute contains an experimental pulp and paper mill which is the envy of foreign research workers.

This mill was designed in its entirety by Mr. Cameron, and as a tribute to his zeal Canadian manufacturers very generously donated much of the equipment which he desired to install. In the year 1929 the building was officially opened by His Excellency Viscount Willingdon, the then governor-general.

Mr. Cameron's chief publications have dealt with the testing of pulp and paper. Through his efforts a considerable advance has been made towards the proper control of pulp production. As an outstanding accomplishment and monument to his memory there is in daily use in every Canadian mill, as also in mills situated so far from Canada as Sweden and Japan an instrument by which is controlled the quality of the pulp which is produced in the groundwood process.

This instrument was standardized through the researches of Mr. Cameron and his staff and marks the first steps in international standardization of pulp testing equipment.

Mr. Cameron went overseas with the Canadian Expeditionary Force, and served as a captain in an artillery unit.

He is survived by his wife, Isabel Fraser, and two young sons; also by his mother, as well as a sister and two brothers. His father, E. R. Cameron, of Ottawa, formerly registrar of the Supreme Court of Canada predeceased him a few months ago.

Interment took place at Ottawa.

Philip G. Baltz

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., May 16, 1931.—Philip G. Baltz, 58, of Evanston, Ill., widely known in the paper trade, died at 4:30 Sunday afternoon, May 10, in Borgess Hospital. He was brought to the local institution two weeks before, victim of an attack of heart trouble that proved fatal. The turn for the worse came Saturday, May 9.

Mr. Baltz came to this city in 1910 as sales manager of the King Paper Company, now a division of Allied Paper Mills. In 1916 he went with the late John F. King and was a factor in the organization of the Rex Paper Company. For many years he has been with the Northwest Paper Company, Cloquet, Minn., being an important cog in the concern's sales department.

He was born in Buffalo, N. Y., January 29, 1873. While still in his teens he started in the paper business, becoming first associated with the Courier Company, of Buffalo. He then went to St. Louis and was in turn with the Graham Paper Company and the Brown-Clark Paper Company. He was one of the organizers of the Beacon Paper Company, resigning in 1902, was associated with various mills for eight years, and then came to Kalamazoo. His entire career in the paper trade has been devoted to the sales end and he enjoyd an acquaintance in that industry, exceeded by but few men in America.

The immediate survivors are his wife, formerly Miss Helen Downey, of Kalamazoo; four sisters, Mrs. Charles Engel and Miss Helen F. Baltz, Buffalo; Mrs. Edgar T. Donohue, Chicago; and Mrs. James Hermans, New York; also two brothers, Peter R. Baltz, Akron, and C. W. Baltz, Buffalo.

Dr. A. D. Daniels

RHINELANDER, Wis., May 18, 1931.—Dr. A. D. Daniels, president of the Daniels Manufacturing Company, and vice-president of the Rhinelander Paper Company, died early Thursday morning, May 7.

Alfred D. Daniels was born in Oxford County, Maine, on August 11, 1853, the son of Mr. and Mrs. Joseph T. Daniels. He received his early education in Maine, attending the Paris Hill Academy and Bowdoin College. He left Bowdoin to complete his course in medicine at Detroit Medical College and in 1875 he received a degree as a doctor of medicine from Detroit.

While he was attending school, his father became attracted to Wisconsin because of the opportunities for lumbering. Joseph T. Daniels moved to Neenah and undertook extensive lumbering operations, chiefly along the Wolf River. In connection with his operation, the father established a sawmill at Dancy, on the Little Eau Pleine River, which he operated for a number of years.

Because of the family's removal to Wisconsin, Alfred Daniels came to this state. In January of 1876 he established a practice in Winneconne, where he remained for eight years. His practice in Winneconne was interrupted by a breakdown in health which necessitated giving up the arduous work which the practice of medicine then involved.

After coming to this city to begin practice, Dr. Daniels became associated with his father in the organization of

A. D. Daniels & Co., pioneer banking firm of what is now the city of Rhinelander. An outgrowth of A. D. Daniels & Co., was the First National Bank, with which Dr. Daniels was identified as vice president.

Four other major industries in Rhinelander were organized with Dr. Daniels' cooperation. They are the Rhinelander Paper Company, of which the doctor was vice president from the time of its organiaztion; the Daniels Manufacturing Company, of which he was president; the Wisconsin Veneer Company and the Rhinelander Refrigerator Company. He also was instrumental in organizing the Rhinelander First Securities Company, of which he was vice president.

Although not active in practice, Dr. Daniels maintained his interest in the profession and for a number of years continued his membership in the American Medical Association. Dr. Daniels was a thirty-second degree Mason and a Knight Templar. He also had been a member of the Elks and Odd Fellows.

In 1889 Dr. Daniels was married in New London to Miss Ella Sterling, who had come to Rhinelander in the spring of 1888 to teach school. Mrs. Daniels and a son, Joseph D. Daniels, survive.

James A. Robertson

BOSTON, Mass., May 18, 1931.—The funeral of James A. Robertson, for some time associated with the Hollingsworth & Vose Company, at Walpole, Mass., and later with the Warren Paper Company, Brooklyn, N. Y., was held at the Congregational Church, Maynard, Mass., Saturday afternoon. Mr. Robertson, who had passed the winter in Florida, was stricken in Washington, D. C., Wednesday, while on his way north. He was in his eightieth year. He had long been a resident of Malden, Mass., and had lived at 66 Belmont street since 1916.

Mr. Robertson was born in Manchester, N. H., the son of James and Flora (McNeil) Robertson. He received his education at Pepperell Academy. He had been retired from business for some time. Mr. Robertson was a member of Orient Lodge, F. and A. M., of Norwood, Mass. He is survived by his second wife, who was Mattie Hayward, and a step-son Frederick Robertson, of New York.

H. L. Carter, Jr.

PHILADELPHIA, Pa., May 18, 1931.—Henry L. Carter Jr., son of the former president of the York Haven Paper Company, York Haven, Pa., passed away last week following a brief illness from pneumonia. He was 54 years of age. He was formerly associated with his father Henry L. Carter, Sr., in the York Haven Company, remaining in the business a short while. He retired and was former Justice of the Peace at Edgemont, and in recent times lived at Gradyville, Del., where he died. He, in the last few years, was deputy sheriff in Delaware. Surviving are his widow, three daughters, a stepson, Walker E. Cisler, and a stepdaughter, Miss Anna Cisler. He is a cousin of Col. Charles Carter, Philadelphia representative of the McAndrews and Forbes Company, board paper division.

Finnish Paper Dealers Organize

WASHINGTON, D. C., May 13, 1931—Trade Commissioner Sommer at Helsingfors reports to the Department of Commerce that the Finnish Paper Dealers Association was recently organized by some seventy paper dealers. The purpose of the organization is stated to be the discussion and regulation of problems common to the trade in Finland.

New York Trade Jottings

W. K. Gerbrick, of the Central Paper Company, Menasha, Wis., and president of the Gummed Industries Association, is a New York visitor this week.

* * *

J. A. C. Kavanagh, director of the Statistical Department of the American Paper and Pulp Association, with headquarters at 370 Lexington Avenue, New York, is visiting the paper and pulp mills in Michigan, Wisconsin and Minnesota.

* * *

Ajiamaru Shiraishi, chief engineer of the Japanese Government Paper Mill at Tokyo, has just arrived in this country. Mr. Shiraishi is making a world tour of the paper and pulp mills. He plans to remain in America for about two months and will make his headquarters while in New York at the offices of Mitsui & Co., 65 Broadway.

* * *

The first packaging conference, clinic and exposition of the American Management Association opened at the Hotel Pennsylvania, New York, on Tuesday, May 19, and will be continued until today, Thursday. At the exposition packages of cardboard, cellophane and paper, theft-proof, water-proof and air-tight, are being displayed.

* * *

Milton L. Smith, until recently cost accountant with the News Print Service Bureau, arrived at the Klamath Agency, Oregon, on May 9, to take up his new position in the United States Indian Service. Mr. Smith left New York for the Pacific Coast on April 5, with his wife and children, and travelled by automobile through Virginia, Alabama, Texas, Arizona and Southern California to the scene of his new activities. Altogether, he covered 4,639 miles in his trusty Packard.

* * *

John Mills, director of publication for the Bell Telephone Laboratories, was the guest speaker at the regular weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry, last Tuesday, at George's Restaurant. The subject of his address was "A Balanced Ration of Work." He discussed individual action in the terms of "Study," "Creation," "Mental Routines" and "Physical Routines"; and collective action in the terms of relations with superiors, equals and inferiors. Mr. Mills' address was voted most interesting and instructive and was thoroughly appreciated by all present.

* * *

The New York Paper Trade Golf Association held its Annual Spring Tournament at the Shackamaxon Golf Club, Westfield, N. J., on May 12 and 13. The prize winners were as follows: Low Gross in the Qualifying Round, Alexander Calder, vice-president of the Union Bag & Paper Corporation; Kickers Handicap, James Laden; Winner of the Luke Trophy for the best 36 holes with handicap, W. L. Raymond; Winner of 36 hole medal play with handicap, Charles R. McMillen; Winner of First Eight Championship Division, Charles R. McMillen; Winner of Second Eight, Mr. Anders; Winner of Third Eight, Mr. Johnston; Winner of Fourth Eight, Mr. Flint, and Winner of Fifth Eight, Mr. Dillon.

Abell Box Corp. Incorporates

INDIANAPOLIS, Ind., May 18 —Articles of incorporation have been filed with the secretary of state here by the Abell Box Corporation having a principal place of business in Marion, Ind.

PAPER TRADE JOURNAL

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STABILIZING NEWS PRINT PRICES

The feeling is that the International Paper Company has initiated the most constructive programme yet offered in connection with the news print industry by its new schedule of prices based on a 6-year contract. If this plan meets with general acceptance it will effect just what all the executives have been seeking, namely, a stabilization of prices that will permit of reorganization plans proceeding on an assured basis. One of the greatest obstacles in the way of such reorganization has been lack of confidence in the future price trend, with the possibility that cut-throat competition might at any moment break out, driving many companies into bankruptcy and thoroughly disrupting the industry. As already indicated, publishers have been just as apprehensive as the manufacturers regarding such an outcome, as they recognize that the results in the end would only be to their great disadvantage. The plan submitted by the International Paper Company, it is felt, would give a long-term price stability which would be heartily welcomed in the publishing trade, both Canadian and American publishers it is claimed, being in general agreement on this point. If such proves actually to be the case, then the much-needed merger plans could reasonably go ahead, relieved of publisher opposition and of the suspicion of ulterior motives on the part of news print manufacturers.

It is recalled that in April of last year, Col. John H. Price, as the then head of the Canadian Newsprint Institute, proposed to the American Newspaper Publishers' Association a three-year contract. At a meeting of the A. N. P. A., held in New York on April 24, the Association went on record as "approving the principle of a broad economic stabilization of production and distribution of news print paper over a period of years." The association's paper committee had previously met and approved in general terms the Newsprint Institute's stabilization plan, which provided for a gradual increase in price over a three-year period.

Progress in this plan was defeated by the fact that members of the Newsprint Institute were not loyal among themselves, but started on a sort of "devil take the hindmost" competition. This was not altogether unconnected with the fact that various "independents" were securing what was felt was an undue share of the existing business, members of the Institute whose mills were running on a 60 per cent basis having before them the spectacle of "independents" running at 100 per cent capacity. The "independents" still present a problem, but it is felt that if the leading producers can combine on a plan such as that set forth by the International Paper Company, this situation will right itself.

Meanwhile investors it is said are anxiously awaiting the capital reorganization plan of the Protective Committee of the Canada Power and Paper Corporation which it is felt will be the next important step in the rehabilitation of the entire industry. This may now be made public at any moment. From unofficial sources it is gathered that the plan to be offered to security holders will set up a new capital structure on the company as a single unit.

PULP AND PAPER PRODUCTION

According to identical mill reports to the Statistical Department of the American Paper and Pulp Association from members and cooperating organizations, the daily average of total paper production in March decreased 1 per cent under February but was 13 per cent under March, 1930. The daily average wood pulp production in March was 1 per cent under February, 1931, and 25 per cent under March, 1930.

Compared with March a year ago, the daily average production registered a decrease in the following grades: News print, uncoated book, paperboard, wrapping, bag, writing, tissue, hanging and building papers. Compared with February, 1931, news print and writing papers were the only grades whose daily average production showed an increase. Total shipments of all major grades decreased 16 per cent during the first three months of 1931 as compared with the first three months of 1930.

Identical pulp mill reports for the first quarter of 1931 indicated that the total pulp consumed by reporting mills was 19 per cent less than for the first quarter of 1930, while total shipments to the open market during the first quarter were also sharply below the total for the same period of 1930.

REPORT OF PAPER OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF MARCH, 1931

Grade	Production tons	Shipments tons	Stocks on hand end of month tons
News print	100,590	101,044	32,254
Book (uncoated)	78,599	78,429	47,689*
Paper board	177,542	177,222	67,986
Wrapping	44,159	44,557	48,820
Bag	9,484	9,501	7,016
Writing, etc.	28,372	27,080	50,373
Tissue	5,626	5,291	3,548
Hanging	3,204	3,670	3,981
Building	4,966	4,935	3,071
Other grades	16,393	16,730	14,960
Total—All grades	468,935	468,459	279,698

* Revised.

REPORT OF WOOD PULP OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF MARCH, 1931

Grade	Production tons	Used during month tons	Shipped during month tons	Stocks on hand end of month tons
Ground wood	75,154	70,383	1,912	48,190
Sulphite news grade	29,331	28,260	1,466	5,203
Sulphite bleached	20,800	18,865	1,907	3,343
Sulphite easy bleaching	2,428	2,239	156	657
Sulphite Mitscherlich	6,961	5,917	1,087	1,489
Kraft pulp	26,150	21,831	4,272	8,054
Soda pulp	19,013	14,390	4,384	3,172
Pulp—Other grades	594	468	124	355
Total—All grades	180,431	162,353	15,308	70,463

All grades of pulp, excepting ground wood, bleached, easy bleaching sulphite, kraft and soda pulps, registered decreases in inventory at the end of March, 1931, as against the end of February, 1931. As compared with March, 1930, ground wood, news grade sulphite, easy bleaching sulphite, kraft and soda pulp registered decreases in inventory.

Business Men To Visit Russia

During the summer of 1930 Dr. Henry R. Seager, of the Faculty of Political Science of Columbia University, and a group of economists and business men went to Russia to make a study of the Soviet Five-year plant of the possibilities for future Soviet-United States trade. Those who made this trip were unanimous in the opinion that the Russian market is rich with opportunities which are to be had for the asking. Dr. Seager made arrangements with Soviet officials to interview American business men who might visit Russia during the summer of 1931 and discuss these opportunities with them. Roy H. Mackay, economist, and authority on Soviet affairs, is carrying out these arrangements and extends an invitation to American manufacturers, engineers and economists to visit Russia during the coming summer and make a conservative study of the Russian market.

A program of thirty days, from Berlin back to Berlin, has been arranged. For the convenience of those who wish to make the trip the party will be divided into two groups, the first to leave Berlin on July 15 and the second on July 25.

Conferences will be held with Soviet officials and American engineers and builders in the principal industrial centers. The Soviet officials are eager to discuss the opportunities available. Representatives of the Soviet government and American economists who have made a thorough study of Soviet economy, will accompany both groups so that the situation may be understood from all viewpoints.

Business men, economists, engineers and builders who are interested in joining one of these groups should communicate with Roy H. Mackay, Fayerweather Hall, Columbia University, New York City.

W. L. Raymond Joins P. H. Glatfelter Co.

SPRING GROVE, Pa., May 11, 1931.—The P. H. Glatfelter Company has notified the trade of the addition to its sales organization of William L. Raymond, who has previously been connected with the sales department of another mill in New York. A sales office will be opened on May 18, in the Fifth Avenue Building, 200 Fifth Avenue.

The mills of the P. H. Glatfelter Company, making book and bond papers, are in close proximity to the metropolitan district and enjoy a wide patronage. It is felt that a representative resident in New York will greatly increase the efficiency of the service rendered their customers.

The Spring Grove Mills are now operating on a schedule of five or five and one-half days a week.

Rehabilitating Holyoke Paper Mills

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., May 12, 1931—The changes and renovations at the Parsons Division of the American Writing Paper Company are but part of a program of rehabilitation of the mills of the company involving an outlay of at least $300,000 it was announced the past week. Competition with the newer, and in some cases, better equipped mills of the West and South are compelling paper manufacturers of New England, desirous of holding their business to spend many hundreds of thousands of dollars in up-to-date machinery and fixtures.

This story is going the rounds of a local paper manufacturer. One large and valued customer for many years informed him that he could no longer do business with him; the rates offered by a western mill were too low to be further ignored. The local manufacturer then figured out as close as possible to cost and submitted new figures. These new figures were still out of line; so Mr. Manufacturer took a trip West to find out what was the situation and found that the mill in question had such late machinery, such up-to-the-minute methods in handling of both raw and finished material and such a modern power plant that it could make a profit on paper at a price that the Holyoke manufacturer could not make it for. So he hied home sadder but wiser; and it is quite likely that another paper mill in the city will shortly be rehabilitated.

St. Helens Pulp & Paper Co. Pays Dividend

The St. Helens Pulp and Paper Company, St. Helens, Oregon, paid dividends of 20 cents a share to holders of common stock as of record April 25, on May 1. This represented a 2 per cent dividend on the $10 par value common stock. This company has never passed a dividend and reports a thriving business in making kraft specialties. The mill has a rated capacity of 60 tons daily of finished paper.

The balance sheet as of December 31, 1930, showed cash and securities amounting to $497,920 against current liabilities of $427,098. Quick assets at the end of 1929 were reported as $1,030,265.

The net profit of the company for 1930 was reported as $287,314, after all charges, including federal taxes. Gross profit amounted to $530,267 before deductions for taxes, discounts, bond interest and $134,486 for depreciation. Dividends of $158,365 were paid during 1930.

At present the company is completing a construction program of $500,000 for new machinery which will be in operation by July 1. This includes a second paper machine to manufacture new kraft specialties. The company has been making bleached and semi-bleached items as well as bags and heavy wrapping papers.

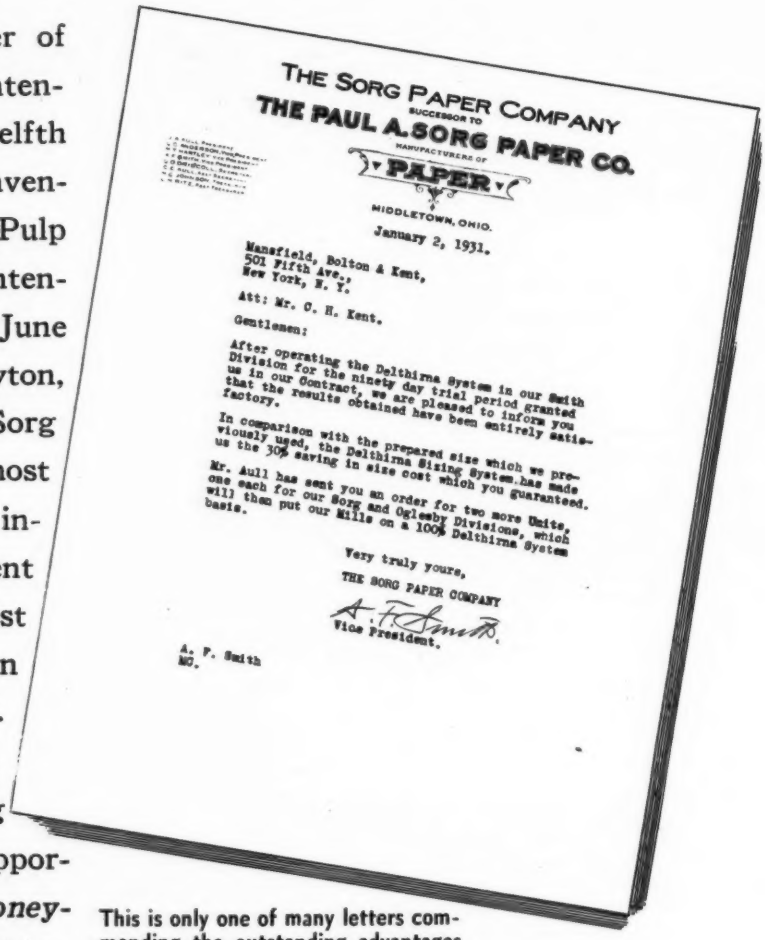
New Pulp Terminal Busy

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., May 4, 1931—Pulp wood importers are taking an active interest in the new port terminal here and inquiries are being received daily. Edwin B. Erickson, of Pagel, Horton & Co., of New York City, is planning an extensive tour of paper mill districts in Northern New York during which he will endeavor to induce manufacturers to import their raw materials through the local terminal. Mr. Erickson, who is chairman of the traffic committee of the American Wood Pulp Importers' Association, will be accompanied on the tour by H. J. White, manager of the terminal operating firm in this city. It is claimed that the trip will result in annual importations of about 200,000 tons of wood pulp through the local port if it meets with success.

Superintendents at the A. P & P. M. S. Convention can see the DELTHIRNA SYSTEM in operation

A LARGE number of paper mill superintendents attending the Twelfth Annual National Convention of the American Pulp & Paper Mill Superintendent's Association, June 4th, 5th and 6th, at Dayton, Ohio, will visit the Sorg Mills to learn of the most modern equipment installed there—equipment that allows the most efficient mill operation at the lowest cost. These superintendents who will visit the Sorg Mill will have a real opportunity to see the *money-saving Delthirna Sizing Process* in operation.



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SUCCESSOR TO
THE PAUL A. SORG PAPER CO.
MANUFACTURERS OF
PAPER
MIDDLETOWN, OHIO.

January 2, 1931.

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Att: Mr. C. H. Kent.

Gentlemen:

After operating the Delthirna System in our Smith Division for the ninety day trial period granted us in our Contract, we are pleased to inform you that the results obtained have been entirely satisfactory.

In comparison with the prepared size which we previously used, the Delthirna Sizing System has made us the 30% saving in size cost which you guaranteed.

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Very truly yours,
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A. F. Smith
Vice President.

A. F. Smith
MC.

This is only one of many letters commending the outstanding advantages of the Delthirna Sizing Process.

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AMERICAN DELTHIRNA CORPORATION

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Counter-Current Washing Of Pulp*

By C. R. P. Cash[1]

The principles of counter-current washing have been used for many years in a large group of diversified industries. In the pulp and paper industry a few examples are the removal of spent bleach liquors from pulp, the washing of lime sludge in causticizing operations, washing of black liquor from sulphate pulp and the leaching of soda from black ash in the soda process.

In all cases the advantages of a counter-current system are threefold, being a lower consumption of wash water with a resulting higher concentration of effluent and a more thorough washing of the material. In any system, of course, these advantages are interdependent on each other and the operation is governed by their relative value. For instance in washing black liquor out of sulphate or soda pulp the steam cost for evaporation of the weak liquor increases as the soda loss decreases and in this case the relation between the cost of steam and of soda govern the degree to which the pulp is washed, that is while still returning the washings to the weak liquors.

Counter-current washing of black liquor from pulp is only commonly practiced where diffusers or wash pans are used. However, one large mill is using a series of ten deckers of special design, comprising ten effects and they have achieved remarkable results with this installation, obtaining liquor for the evaporators testing on an average 15.3 Beaume at 60 deg. F. with strong liquor entering at from 17 to 18 Beaume.

Three and four effect decker type washers are in common use for bleach washing.

Vacuum Filters

In recent years vacuum filters have been extensively used for washing pulps and while these have been installed to operate in counter-current systems for bleach washing in a number of cases the counter-current washing of black liquor on vacuum filters seems to have been sadly neglected. This is no doubt due to a high first cost and the trouble experienced with foam. Vacuum filters, however, offer such distinct advantages, principally that of a high degree of displacement washing that it seems very desirable to develop them for the washing of black liquor from pulp in a counter-current system. One stage of washing on a vacuum filter is equivalent to several stages in an ordinary system due to this capacity for displacement washing.

In a simple counter-current washing system with adequate agitation of the solids between stages the performance can be quite closely calculated by equating the quantities entering and leaving each effect. A good example of one method of calculation is given in Liddell's Principles of Chemical Engineering. The performance of a vacuum filter operation can best be determined experimentally and the writer recently conducted a series of laboratory experiments with a view to determining the advantages of two stage washing of kraft pulp on vacuum filters. It is realized that since these experiments were made on a small scale that they should not be regarded as conclusive but the results are so encouraging that the writer believes they warrant continuing the work on a semi-commercial scale.

Experimental Results

Three series of runs were made. The first using a single stage system adhering as closely as possible to mill conditions, the other two using a counter-current two stage system maintaining conditions as close to what it was to be expected would prevail in the mill as possible.

In all the runs stock was made up to the same consistency with the same strength liquor as is usually blown from the digester. For the first series of runs a weighed quantity of this blow-pit stock was diluted with enough weak liquor of strength obtained in mill practice to give a mixture corresponding to that sent to the filters in the mill. This mixture was then filtered on a Buchnell funnel and then washed with a definite quantity of hot water. The volumes and densities of the resulting solutions were then determined and the cake was tested for water content and the soda remaining in it.

In the second and third runs the procedure was the same with exception that the blow-pit stock was diluted with a stronger liquor, filtered and washed with a weaker liquor, this cake diluted with the weaker liquor, filtered and then washed with hot water. In the second series ten filtrations were made and in the third five and the determinations made on the combined resulting liquors respectively. This was done so that the cumulative effect of succeeding operations could compensate for error in assuming the strength of the solutions used for the first dilutions.

In the first and second series the mixtures and wash water were both hot. In the second the mixtures of liquor and stock were cold and the wash water hot. This condition of course would not hold in mill practice.

The results and data of the different runs are given in the attached table.

The steam savings were calculated by analyzing the black liquor and determining its chemical content for varying concentrations. Two curves were then plotted from this data, one showing the pounds sodium oxide against specific gravity and the other pounds water per pound sodium oxide to be evaporated to produce 40.0 Beaume liquor plotted against specific gravity.

The curve of chemical content against specific gravity is almost a straight line, since until the liquor becomes quite strong its chemical content varies very nearly directly as the specific gravity minus one.

TAPPI SECTION, PAGE 282

* Presented at the spring meeting of the Pacific Section of the Technical Association of the Pulp and Paper Industry, Everett, Wash., April 18-19, 1931.

[1] Member TAPPI, St. Regis Kraft Company, Tacoma, Wash.

The curve of pounds of water per pound sodium oxide has the form of a hyperbola and if calculated for total water would be a rectangular hyperbola of which the axis of zero water and the axis of zero chemical would be asymptotes. An inspection of such a curve shows strikingly the steam savings possible by even a small increase of the density of the weaker liquors.

It is realized the foam problem no doubt would be serious in the counter-current washing of black liquor especially with resinous woods but no important advance in an art is made without meeting and overcoming such problems.

Increasing paper machine widths and speeds involved difficult problems of design and operation but they were overcome and now we run machines at speeds and widths which a comparatively few years ago would have seemed impossible.

High density bleaching was not achieved without overcoming many knotty problems, yet all up to date mills now bleach in this manner.

The vacuum drier, easily the greatest stride in the drying of pulp and paper of the century, is an accomplished fact because the difficulties it presented were resolutely attacked.

The elimination of foam is no doubt difficult but the writer is convinced that a reasonable amount of serious effort will remove this obstacle to the successful counter-current washing of black liquor from pulp.

DATA AND RESULTS
FIRST SERIES. SINGLE STAGE

Consistency of blow-pit stock	Density blow-pit liquor, Be.	Consistency for filtration	Density liquor for dilution, Be.	Wash water, gallons per ton	Density final liquor, Be.	Consistency of cake	Loss pounds Na_2O per ton	Temp. F. Diluted stock	Temp. F. Wash water	Lbs. water per lb. Na_2O in final liquor
10.7	16.9	2.02	9.5	1760	9.5	29.6	37.1	130	170	23.7
10.7	16.9	2.02	9.5	1950	9.75	31.4	35.3	130	170	24.0
11.1	16.9	1.94	9.5	2220	9.7	32.3	26.0	130	170	24.0
11.1	16.9	1.94	9.5	2400	9.56	31.8	25.4	130	170	25.7

SECOND AND THIRD SERIES. TWO-STAGE

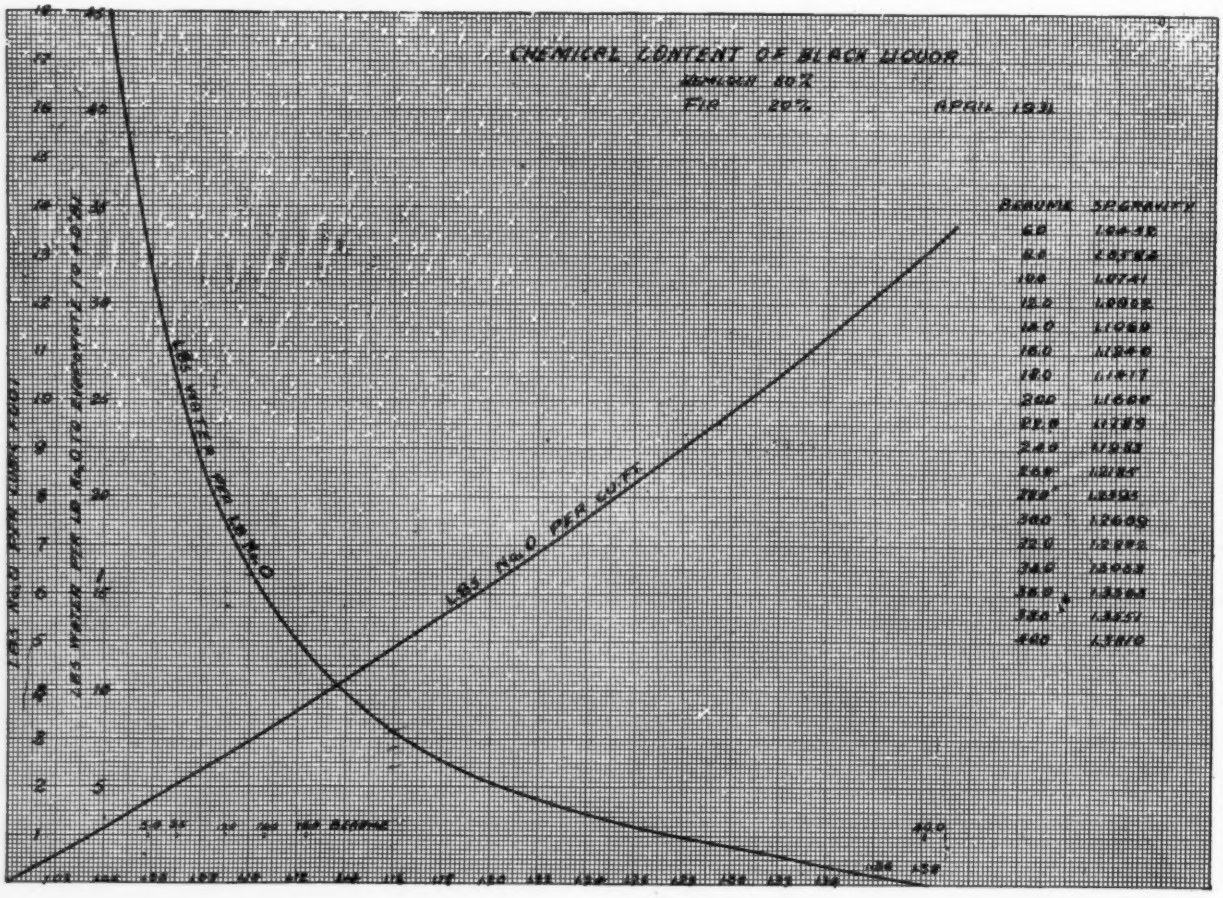
	Consistency of blow-pit stock	Density blow-pit liquor	Density Be. Dilution liquor, first stage	Density Be. Dilution liquor, second stage	Final liquor	Wash water, gallons per ton	Consistency of cake	Loss pounds Na_2O per ton	Temp. F. First stage	Temp. F. Second stage	Temp. F. Wash water	Lbs. water per lb. Na_2O in final liquor
Series No. 2												
Start	11.7	16.1	12.0	6.0	...	...	...	...	...	...	...	...
Finish	...	...	12.7	5.4	11.8	1482	28.7	30.2	75	75	158	18.7
Series No. 3												
Start	10.3	16.5	12.9	6.1	...	...	...	...	...	...	...	...
Finish	...	...	12.7	5.4	11.8	1482	28.7	30.2	75	75	158	16.7

Note: All consistencies are in terms of air dry.

Conclusions

In practice it has been found possible to obtain liquor in a single stage system testing 9.5 Beaume at 60 deg. F. The runs show in the case of the second series a steam saving in evaporation of 18.7 per cent and in the third series a saving of 39.7 per cent.

It should be noted that the cake was considerably drier in the above experimental runs than obtains in practice, although the formation of the cake was not so good as that obtained on a large machine.



Suction Press Rolls*

By P. M. Foster[1]

The subject of my discussion is suction press rolls and I will attempt to give you a glimpse of the fundamental principles underlying the use of suction press rolls in the modern fourdrinier and cylinder machines. It is the firm conviction of the leading engineers on paper machine design and construction that obsolescence is in a large measure the result of the concentrated effort and consequent progress made by paper machine engineers to develop improvements to existing paper machines. This obsolescence results directly from the progress made by the paper machine engineers cooperating hand in hand with the paper mill operators in developing equipment that would meet and successfully overcome the troubles of the paper maker and assist him in obtaining a better product and more of it at a lower cost in order to survive in competition with the newer mills. Unless something could be done to most of the old machines which would enable them to speed up and reduce costs, many of them would have to fall by the way-side.

One of the most outstanding improvements which could be added to almost any existing paper machine has been the suction press roll, giving results which would justify, in a very short time, the cost of the installation. The efficiency of a paper machine depends to a large extent upon the cost of removing water from the wet web of paper in the press section. Before suction press rolls were adopted, the program of water removal passed through a period, first using a hard metallic covered roll co-working with a soft rubber covered roll, the hardness gradually being increased from a comparatively soft rubber to a hard rubber. While this was being brought about by mills trying to improve their product with a decrease in costs, higher nip pressures were used.

Of course nip widths increase directly as the square root of the pressure applied per lineal inch and also directly increase with the plasticity of the rubber cover. So, in order to remove more water, it was first necessary to increase the density of the rubber covering. For a given weighting of a roll, the water removed from the sheet of paper increases with the nip pressure per square inch.

With the soft rubber roll the nip width would increase rapidly with the weighting and due to the wide nip area and consequently comparatively low unit pressure, only small quantities of water were removed, so greater water removal called for greater weighting which in turn, if to be of benefit to the greatest extent, called for harder rubber covers.

Development of Wet End

If you gentlemen will recall back a few years, you will note the parallel development of the fourdrinier part of the machine which eventually terminated in the present day suction couch, as has a short time later been the gradual development of the press part. It has all come about through the necessity for removing more water before the sheet of paper goes to the dryers.

The above development did not occur without complication arising as direct results. In the first place, the sheet was literally ironed out, thus destroying in part the formation of the fibres. The wet sheet could not physically stand up to the extreme pressure and rolling effect produced in the nip of the hard press rolls. Particles of fibre would be brushed from the soft sheet and would become embedded in the felt, causing the latter to be filled up. Also, water removed would not drain away rapidly enough and water would be carried through the nip between the rolls much in the same way as water goes through a clothes wringer in our homes. This would result in wet streaks and troubles at the dryer section. Improper crowns result in the same thing. The hard surfaces of the rolls being forced together under extremely heavy pressures also cause excessive wear to the felts.

It is difficult, if not impossible, to get two rolls to run together with absolutely even pressure across their line of contact. Of course the softer rolls would tend to eliminate this fault, but it was necessary to get around this undesirable obstacle in some other way, because soft rolls were no longer in the picture when it came to water removal.

Suction press rolls have come into use because of a demand of the mills to remove more water from the wet web of paper in the press section without having to resort to greater nip pressures.

In the case of a suction press the pressure of the top roll with the bottom roll squeezes the water from the wet sheet and the water that is forced back from the nip is immediately pulled out of the way by the vacuum within the roll, thus making room for more water to be forced out and thereby no water is drawn through the nip, wedged as it were between the felt and the roll and in the meshes of the felt.

The possibility of streaks is eliminated in this manner. Also, the felt is kept much drier and in better condition to absorb the water as it is pressed out. The pressure and the felt remove the water while the vacuum disposes of the water rapidly and helps in a large measure to keep the felt clean and at highest efficiency.

Do not understand that as meaning the vacuum does not remove some water from the sheet. If that were true, a suction press would have to be weighted the same or rather have the same nip pressure as does a plan press, but this is not true.

Test Data

For example: In a prominent mill recently a number of very exacting moisture tests were made before and after the installation of a rubber covered second suction press roll. The machine was running on 40 pound kraft bag paper. After the installation of the roll and with no other changes to the machine, and under identically the same stock and climatic conditions, the machine ran more than 8 per cent faster with but slightly more than 50 per cent of the linear pressure while removing 1 per cent more water figured on a bone dry basis with a steam pressure of 23.75 pound gauge before the installation and only 15.75 pounds gauge after the installation, or a reduction of nearly 35 per cent in the face of a considerable increase in speed. With a weighting of the press equal to a linear pressure of 70 per cent of that used with the plain press, the sheet was 1.8 per cent drier going to the dryers while running at a speed of more than 8 per cent faster.

With a comparison of 50 pound bag paper, the results were equally as gratifying; namely, the speed was 31½ per cent faster with a linear pressure of less than 50 per cent of that necessary before the installation while the sheet was 1¼ per cent drier going to the dryers.

The fact that an increased weighting or linear pressure removed considerable more water from the sheet demonstrates clearly that a larger percentage of the water removed at the suction press is accomplished through pressure. Also, since in no case after the suction roll was installed was the linear pressure greater than 70 per cent of that used with the plain press, still a larger amount of water was removed which is probably creditable to the effect of drawing air through the sheet and

* Presented at the spring meeting of the Southern Div. of the Supts. Assn., Mobile, Alabama, April 17, 1931.

[1] Engineer, Beloit Iron Works, Beloit, Wis.

to the higher efficiency of the felt due to its being cleaner and drier.

To show the importance of water removal at the press section instead of at the drier section, I will borrow some facts collected by a prominent felt manufacturer. Assuming the sheet enters the presses 14 per cent dry, that 1.4 pounds of steam evaporates 1 pound of water, that steam costs 30 cents per 1000 pounds, and that the felt cost per ton of paper is 51 cents, it is found that the average cost of removing one ton of water at the presses varies from 12 to 16 cents as against 84 cents for removing one ton of water at the dryers.

Please remember that an improvement of 1 per cent in bone dry content at the press is equal to more than a saving in the steam required to dry 1 per cent more moisture from the sheet in the dryer section, which in dollars and cents is a large and very important item.

To quote again from a bulletin published and distributed by the same felt manufacturer, "A reduction of the percentage moisture content of the sheet entering dryers by only 1 per cent saves one-fourth to one-half of the entire felt bill. An increase of 5 per cent, say from 26 to 31, saves $1.06 for every ton of paper. In a one hundred ton mill this would mean a saving of $32,000.00 a year."

I have not the data to prove these statements, nor do I see any reason to disprove them, for they are published statements of a highly reputable manufacturing company which I am sure had seasoned facts upon which to base its statements. It would certainly appear to the layman with but a hazy idea of economy that in stressing the wastefulness of the enormous fiber loss in paper machine white water, a just as staggering waste of power and heat is being overlooked in a great many mills today. This waste is due to the low water removal efficiency of the average paper machine press section.

The amount of water a first suction press removes should not be overlooked. On results of tests, the data of which I have with me, show a first suction press on a high speed Kraft machine reducing the moisture content of various weights of bag paper more than the combined results obtained from three plain presses very heavily weighted and running similar weights and grades of paper. The comparative felt life of the two machines mentioned reads like a multiplication table.

Suction Second Press

A similar comparison of the results obtained after suction second press installations against those of plain second and third presses shows that the suction press sends the sheet to the dryer section drier than does the combined effort of two plain presses. This is so well established a fact that mills are removing their third presses entirely when replacing their plain second presses with suction presses. Think what this means in reduced felt, steam and rubber costs.

Nothing has been said thus far about what saving in power can be effected by the use of suction press rolls. Take for instance a suction second press installation. In the first place this press would undoubtedly replace two plain presses. The two plain presses, if doing any work at all, would be heavily weighted and the weighting of presses is what consumes power: the bearings on these plain presses might have plain sleeve or babbitted bearings which also are power eaters as is attested by elaborate water cooling devices with which this type bearings are equipped. The new suction press would of course be mounted in anti-friction bearings. So after a summation of savings is made, the power required (including that used for driving the vacuum pump) just about balances that required by the two plain presses.

I have never heard of any paper mill man complaining about the amount of power required for operating a first suction press.

There is no more room for complaint about the power requirements of a second suction press. The results are too gratifying.

The second suction press mentioned earlier was a rubber covered suction roll. This roll when running on all grades of kraft bag, wrapping and high finished papers of various weights had absolutely no tendency to mark the sheet. This press used the same kind and type of felt as did the plain press which it replaced. This may be accounted for in the fact that the drilled holes in the rubber cover tend to close when passing through the nip area, thus eliminating any chance for "shadow marking" the sheet. Please do not be alarmed in that a second suction press roll with a metal shell might shadow mark the sheet. I cannot learn where a second suction press has ever marked a number one or a number two kraft sheet to the extent of causing a complaint not to speak of a rejection of paper by a customer.

The rubber covered press roll has another distinct advantage in that it permits the use of a hard top roll without causing reduced felt life. This top roll can be covered with one of the recently developed sheet repelling rubber compounds. According to all reports the sheet will not stick to this type of top roll, thus eliminating the "pick-ups." With a hard roll on top of the sheet, finish is improved, fuzz is laid down and the printing qualities are enhanced.

Summary

In review of the foregoing statements I would like to emphasize several of the advantages of suction press rolls.

1—That one suction press removes more water than two or more plain presses.

2—That this higher rate of water removal from the sheet is accomplished with less pressure.

3—As a result of lower nip pressures, less damage is done to fibre structure, thereby improving the formation and physical characteristics of the finished sheet.

4—Felt life is improved.

5—Felts are kept cleaner and require less frequent washing.

6—Rubber covers on the top roll last longer due to low nip pressures.

7—Roll crowns are not so important nor so great.

8—The sheet leaves the press more uniformly dry. Wet streaks are eliminated.

9—Cockling is greatly reduced.

10—"Pick-ups" with resulting lost production are reduced.

11—Machine speeds can be increased.

12—Drying capacity is increased.

13—Production is increased.

14—Steam pressures reduced.

15—Steam required for drying decreased.

These fifteen advantages of suction press rolls are quite obvious and can be condensed in a short sentence and that is—Suction press rolls reduce the cost of making paper and help take the curse off of the drudgery of paper machine operation. And, after all, isn't that one of the answers to the question—How can a mill meet to-day's competition?

New TAPPI Members

C. E. Hrubesky has been an assistant chemist at the Forest Products Laboratory, Madison, Wis. for the past six years. He is a graduate of the University of Wisconsin.

J. Rissel Kessler is production manager of the Glassine Paper Company, Conshohocken, Pa. In 1920 he graduated from the University of Pennsylvania following which he has been employed as a chemical engineer by the Eastman Kodak Company, Dill & Collins Company and the Du Pont Rayon Company. Mr. Kessler is a former member of TAPPI.

A. Edward Trudo is plant engineer of the Falulah Paper Company, Fitchburg, Mass. Mr. Trudo graduated from the Lowell Institute in 1900 and has been employed as an engineer by the Massachusetts Cotton Mills, Suburban and Malden Electric Company, and the Fisk Rubber Company.

Practical Sidelights on Digester Linings*

By A. F. Richter[1]

The cooking solution employed in the sulphite pulp process, as everyone in the industry knows, is exceedingly destructive when brought in contact with steel plates in the presence of oxygen. Therefore, one of the most important points connected with providing a proper shell structure, involves the elimination of cavities such as are formed by spaces between the edges of steel shell plates, or between improperly fitted covering straps and shell plates. The cooking liquor can have communication or contact with these spaces during the early stages of breaking in a new digester lining.

It would therefore seem appropriate to claim that the first requirement to be met, in order to assure a durable lining installation, is to provide a rigid digester shell. It has previously been shown that the early pioneers, responsible for the development of the sulphite industry, were confronted with the problem of providing tight and rigid digester shells, built true to dimensions and as nearly round as pressure vessels made from heavy plate can be constructed. They were also careful to find means of preventing cavities existing between the edges of the shell plates and they insisted upon having their digester shells pass a rigid hydrostatic and steam test.

Preparation of the Digester Shell

After the boiler makers have completed the construction work and the shell has passed the hydrostatic test requirements and is approved by a representative of some reputable boiler inspection or insurance company, the first step in the direction of safety first, and before the lining installation can start, is the application of a steam test to the new shell. The adopted practice is to apply a steam pressure of from 85 to 105 pounds at the gauge located on the top of the digester. Three separate pressure applications should be made. The first should require 4½ to 5 hours for warming up the shell, and 3½ to 4 hours to bring the pressure up to 85 pounds. The pressure is then blown down slowly. The second application of steam test should be made in about 70 per cent of the total time required for the first application and the pressure should be brought up to 90 to 95 pounds and then relieved slowly. The third pressure application should be made in from 4 to 4½ hours total time and the pressure brought up to the ultimate limit of 100 to 105 pounds, then held at this pressure for 45 to 60 minutes and relieved slowly. The above method of applying steam test is based upon a warm temperature existing in the building, otherwise additional time must be allowed.

The principal purpose of this test is to take up the creep or stretch at the riveted seams and to apply to all the rivets the proper portion of the working strain which they should carry, also to assure the mill owner that his shell will be tight under operating conditions. The hydrostatic test alone will not give this assurance. If some steam leaks should show up during the application of these tests, as described, these leaks should be caulked dry at a reduced pressure, say 40 to 45 pounds per square inch when the first test is completed, and if the shell has been well built, these leaks will not reappear on the second pressure application. Upon the completion of the steam tests, the cover plates at both ends of the shell should be promptly removed, allowing the shell to dry perfectly while still hot. As soon as possible thereafter the shell should be thoroughly cleaned, all oil spots or evidence of other coating must then be carefully removed.

Installing a Lining

The first step under this heading is to insert a sleeve fitting in bottom opening of the digester and bolt same firmly into place. Some cement composition is then poured between the sleeve and the cast steel nozzle fitting which forms the bottom of the digester. From this beginning, the general dimensions and form of the digester shell itself will have an important bearing upon the final thickness of the lining which shall be installed, and upon the procedure which shall be followed throughout the installation period.

It is of great importance to guard against hair cracks and to apply utmost care to prevent disturbing any brick which has been placed in its true position, before the joint material has reached its final set. Likewise, it is of great importance to carefully note that the materials are all bonded and that no dry seams or unfilled joints exist between work completed on one day and resumed on the following day. Frequently an accumulation of laitence on the top of the cement composition will have set firmly during the night, and if not removed before work is resumed the following morning, no perfect bond can be obtained with the previous day's work, hence, an opportunity exists for acid liquor to create cavities in the composition backing, resulting finally in the necessity for shutting this digester down to make repairs to the lining.

The belief existed, for many years, that it was most essential to carry on the installation work continuously, by working two or three shifts. Years of experience have proven that equally as durable and perfect lining installations are obtained by employing only day crews, providing only experienced men are engaged, who exercise proper care in perfecting bond between each separate day's work.

In the event an emergency exists, which may compel continuous work, it becomes necessary to guard against injury to a lining, resulting from applying an overload, through weight of materials, directly on a backing wall, which has not yet set up sufficiently. The workmen employed to make digester lining installations must be the highest grade obtainable and these mechanics should have a working knowledge of the cooking processes, in order to stimulate the quality of their performance. It is conceivable that a good mason who is employed continuously at this class of work should be capable of accomplishing a better quality of workmanship than a mason who works only occasionally on digesters, partially due to the fact that a man engaged in other lines of brick laying may become inclined toward carelessness as a result of his other activities.

Lining Materials

Experience has demonstrated the desirability of selecting a quality of digester brick which furnishes the minimum of porosity with the maximum of elasticity. The word, elasticity, is used here in an effort to define the ability of a brick to meet the expansion and contraction strains which are applied to digester linings. A durable brick should be made from selected clays, ground to pass proper screens as a means of controlling the fineness of the materials, and then molded with such care as to avoid the creation of cavities within the brick structure itself, and finally, when burned under proper temperature control, the brick should not only withstand the action of the solution, but also the varying temperature and pressure strains occurring in digester operations, over a period of several years.

Those familiar with the sulphite process are aware of the fact that the coefficient of expansion for steel is greater than that for lining materials, commonly used, at equal temperatures. It is usually accepted by sulphite mill operators that a proper lining, which is subjected to substantially 300 degrees Fahrenheit on the inside face of the lining, should radiate or transmit heat so slowly that the temperature of the steel shell itself should not range above 165 deg. F., and most operators agree that this temperature limit should not be above 135 deg. F. Quite

* Presented at the meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry, Menasha, Wis., Feb. 10, 1931.

[1] Member TAPPI, president Stebbins Engineering and Manufacturing Company, Watertown, N. Y.

naturally the thickness of the lining enters into this matter prominently, and where the desired capacity from a digester must be forced to the highest production limit, a relatively thin lining is of more importance than the subject of heat losses, but here again the selection of materials which possess the proper coefficients of expansion to meet this new situation adequately, is of grave importance. The sulphite industry is generally accepting a type of brick which possesses low thermal expansion properties. In other words, a class of material which will "breathe" under the working strains without showing signs of spawling.

Porosity control is necessary. A proper digester brick should increase in weight, after being submerged in water at room temperature for 24 hours, not less than 5 per cent of the original weight of the brick nor over 8 per cent. This is a most important point, because the porosity of the brick determines its ability to bond intimately with the joint and backing materials employed in setting the brick, and it also has a great bearing on the penetration of acid liquor into the lining during a period when a new digester is being first placed into production.

The cement used in making a composition backing may be any of the well known domestic brands. American cements now compare with the best European cements and the day has long since passed for the importing of foreign cement to be used in digester work. The quartz or sand employed should be carefully graded and free from all impurities or traces of lime and of a selected fineness which will make a compact mixture.

Acid proof joint materials are as necessary as the proper quality of brick when seeking a durable lining. Various types of mixtures are known, but the litharge composition joint has held its position in the trade for many years and is known to be positively acid proof for the service to which it is subjected in digester work.

Seasoning of Linings

When a new digester lining has been completed, at least five full working days should be allowed between the removal of the scaffold and the application of steam heat, prior to cooking. Since most cements require at least seven days' time to arrive at what is known as full set, it would be an abuse of valuable property to start cooking operations prematurely. We submit that the practice followed in autoclave testing of cements should be adopted as a means of seasoning a digester lining and to raise the temperature on a new installation prior to cooking. We submit as a suggestion the following practice:

At the end of the five day curing period, admit a quantity of steam and release the condensate so as to avoid any pressure within the shell. The temperature should be gradually raised at a uniform rate over a 36 hour period to 212 degrees Fahrenheit. After the 36 hour warming period, the digester should be filled with chips and the acid as quickly as possible, and the first cook started. During the first five cooks the pressure for the

1st hour should not exceed 3 pound gauge
2nd hour should not exceed 8 pound gauge
3rd hour should not exceed 14 pound gauge
4th hour should not exceed 23 pound gauge
5th hour should not exceed 34 pound gauge
6th hour should not exceed 45 pound gauge

This means that the first cook should be of long duration, not less than 18 to 20 hours. Following the first cook, a slight reduction in cooking time may be allowed, but not until the second five cooks should the cooking time be steadily reduced to your regular schedule.

Care of Linings

It goes without saying that linings must be carefully maintained if the user is to enjoy freedom from disturbances in continual operation of his digesters. Under this heading, the most important item provides regular care of the fittings themselves, and the maintenance of tight joints around the fittings. We consider inspections made four to five times a year would safeguard the interests of the mill on this score. It is no longer necessary to shut a digester down every week or month for the purpose of inspecting every joint in the brick wall and to promiscuously point the walls, as the selection of joint material and the quality of the brick has reduced the necessity for this practice, which was so general a few years ago. We do not mean to encourage carelessness, by any means, as rapid destruction will follow failure of a joint, but we feel that most of the operator's attention should be directed to maintaining fittings in good condition by constant care, and that a close general survey be made of the lining about four times a year.

Sweating of Linings

This phenomena called "sweating" has doubtless caused more anxiety in the minds of mill owners than probably any other subject connected with digesters, but it can be easily explained. We have called attention to the fact that a digester shell should be steam tight and we have shown that a certain porosity and elasticity in brick work is of considerable importance when consideration is given to proper bonding of materials through a digester lining installation. We now come to a new digester lining, just starting into operation, and the fact will be readily accepted that liquor penetrates the pores which exist in the lining work, for a distance measured directly by the pressure in pounds per square inch, which is applied to the digester. In the early life of a lining, a film of liquor is moving through the brick wall and cement backing wall until this film of liquor lays in contact with the steel shell itself. After cooking operations have been carried on for a period of 45 to 60 days, the lime compounds are carried into the brick and deposited in these pores. As a result of evaporation of the moisture content taking place when the digester is idle, these pores gradually become filled and most of the minute air cells or spaces are filled.

However, if there is an excessive movement at the riveted seam or should a defective rivet exist in the shell itself, the liquor will gradually bleed from the rivets, effected by a movement imparted through internal strains set up by the expansion of the lining, and applied directly against the shell itself. In the event of a cavity existing in the steel work, and an imperfection or cavity existing in the lining work, coming in direct alignment with each other, it is quite certain to expect that a leak through the steel shell will quickly result therefrom, but if high class workmanship has been performed on the lining, then the only product of this sweating process is an alkaline reaction. Although the appearance of this material on the outside of the shell does not add to the beauty of the shell itself, yet no injury can result therefrom, and these so-called bleeders will become bone dry after a brief time, providing that the temperature in the digester building is maintained at a proper level and sudden cold blasts prevented from coming in contact with the digester shell.

The possibility of a leak resulting from sweating is usually very slight indeed. Leaks are usually caused by unusual expansion strains which result in the creeping of the shell at the riveted seam, or they are directly the fault of poor material and workmanship. In almost every instance over a period of 40 years' experience, we have been able to trace a leak to its source or origin. Usually a leak will make its appearance on the inside of the lining at about the time it is giving evidence of its existence on the digester shell itself.

During our experience, we can definitely record the fact that only one in fifty leaks has penetrated directly through a digester shell plate, the other forty-nine leaks were all through the riveted seam. This experience leads to another subject.

Test Holes

For many years there has been a pronounced agitation in the trade, fostered largely by the insurance companies, that digester shells be drilled throughout the entire area of the shell, with indicator holes often specified as close as 9 inch centers,

but more generally specified as from 1' to 2' centers. We totally disagree with the idea of drilling shell plates , but we heartily endorse the drilling of all covering straps. We should recommend that every vertical covering strap be drilled at three points, namely 9 inches from each end and in the center, with holes which will communicate with the joint between the steel shell plates. These holes should be drilled and tapped for ⅛ inch pipe plug and the plug inserted and left in place during the first 45 to 60 days after a new digester has started into operation. After this period of time, the plugs may be removed. Circumferential straps should be drilled at the center line of the strap as nearly on 4' centers as possible.

In a paragraph above, under "Sweating of Digester," we have endeavored to explain why a large number of small holes drilled throughout a digester shell is a detriment and can in no way give practical aid to anyone. A digester lining is either durable or not in exact proportion to the rigidity of the digester shell itself, providing, of course the proper materials and workmanship are employed. Since one leak in fifty occurred in the center of steel plate, sufficient evidence should be in sight to confirm our views that indicator holes in the strap is the logical place for their location.

Inspection and Insurance

Many sulphite digester shells are still in operation after a life of 40 years in daily and continuous service. This speaks volumes for the quality of steel and class of workmanship supplied at that period, and reflects credit upon the boiler inspector who remained on the ground in full control of these two factors, during the erection of these shells.

Recently some of the insurance companies have made an exhaustive study of the physical condition of most digester shells, which have seen about twenty years' service. Several of these shells were found to have developed defects in the covering straps or reached a stage known as "fatigue" of the metal, requiring the application of new covering straps. Practically all digester shells of twenty years ago, were constructed with single outside covering straps, consequently, new straps, both on the inside and outside of shell, were specified wherever found necessary, intended to increase the safety factor for these shells.

The work now in progress in two plants in the United States reveals a peculiar condition. The original design of the joint on most of these older shells, provided for counter sunk rivet heads on inside of shell. The new covering straps are about double the width of the original outside single strap, and two new rows of rivet holes are being drilled alongside of the original vertical rows of rivet holes. Rivets are being driven through a portion of the old rivet holes, without filling the void represented by original counter sink in shell plate, and a portion of the old rivet holes are left open, while caulking was not specified as necessary on inside strap.

This condition, while providing a better factor of safety at the joint, is nearly ideal for destructive cooking liquor to reach and corrode the metal behind the inside covering strap, as described herein above under the heading, "Sweating." Sufficient community of interest exists between the mill owner, his manager, his plant superintendent, the insurance carriers and the lining contractor to permit working out a standard method of meeting this situation, and the TAPPI should be employed to start the job going.

Analysis of Alum By Means of pH Determinations*

G. Kullerud

Aluminum sulphate, or alum as it is called for the sake of brevity in industry, is an industrial product of many uses and is marketed in several grades depending on the requirements of the user. The grades usually employed in the paper industry contain 14-15 per cent Al_2O_3 or 17-18 per cent Al_2O_3 and the essential difference in these two grades is the amount of water of crystallization.

The theoretical relation between alumina (Al_2O_3) and sulphuric acid (SO_3) in chemically pure aluminum sulphate is 1: 2.35, but in the commercial products variations are found in this ratio because certain grades contain an excess of Al_2O_3 whereas others have an excess of SO_3.

It would seem to be a simple matter to determine the Al_2O_3 content by chemical analysis but many difficulties have been encountered and the literature shows that many methods, both gravimetric and volumetric, have been proposed.

That the ratio of Al_2O_3 to SO_3 is of importance has been shown by the investigations of Paul Klem[1] who has found that an alum with an excess of Al_2O_3 is best suited for fixing filler and dyestuffs, whereas an alum with an excess of SO_3 is best suited for obtaining maximum sizing of paper.

In recent years Walter Quist and Bengt Otterstrom[2] have made thoroughgoing investigation on the matter of alum analysis and refer to previous work along this line, but make no reference to methods based on pH values.

When one considers that the variations in the ratio of Al_2O_3 to SO_3 will cause a variation in the hydrogen ion concentration of a solution it would seem relatively simple to find a method of expressing this ratio in terms of pH, especially since the variations in excess of Al_2O_3 or of SO_3 are relatively small. The method described in this article is based on making a pH determination on an alum solution of known specific gravity, which results can be used to calculate the excess of Al_2O_3 or SO_3.

Specific Gravity of Solutions of Pure Aluminum Sulphate

Tables of specific gravity of solutions of $Al_2(SO_4)_3$ can be found in handbooks of physical constants. In this investigation the work was carried on at 18 deg. C., taking water at 18 deg. C. as unity, and weighing in air. The aluminum sulphate used was recrystallized several times and tested for purity. Specific gravity was determined by means of an accurate pyknometer. Alum solutions with an excess of Al_2O_3 have a slightly lower specific gravity than chemically pure aluminum sulphate at the same concentrations, and those with an excess of SO_3 have a slightly higher specific gravity. However, these deviations are so slight for the excesses of Al_2O_3 or SO_3 usually encountered that they can be neglected.

TABLE I

$Al_2(SO_4)_3$ per cent	Sp. G. 18/18° C.	pH	$Al_2(SO_4)_3$ per cent	Sp. G. 18/18° C.	pH
1	1.0100	3.28	11	1.1167	2.69
2	1.0201	3.17	12	1.1280	2.65
3	1.0304	3.10	13	1.1394	2.61
4	1.0409	3.03	14	1.1510	2.57
5	1.0514	2.97	15	1.1626	2.54
6	1.0621	2.91	16	1.1744	2.50
7	1.0728	2.85	17	1.1865	2.45
8	1.0836	2.82	18	1.1986	2.41
9	1.0945	2.77	19	1.2108	2.37
10	1.1055	2.73	20	1.2232	2.33
			21	1.2358	2.29

* Papier-Journalen 18, 252-5 (1930). Abridged translation by C. E. Peterson.

[1] Wochenblatt, p. 2034 (1912).
Wochenblatt, p. 1642 (1921).
Wochenblatt, p. 655 (1924).

[2] Pappers och Trävarutidskrift för Finland, p. 970 (1929).
Pappers och Trävarutidskrift för Finland, p. 548 (1930).

pH in Solutions of Pure Aluminum Sulphate

Determination of pH of alum solutions can be made electrometrically with either hydrogen or quinhydrone electrode, or colorimetrically with a suitable indicator. In the electrometric methods we used a 3.5 NKCl solution.

Biilmanns quinhydrone method requires less equipment than the hydrogen electrode method, but has the disadvantage that small traces of iron sometimes found in commercial grades of alum set up an oxidation-reduction potential which acts in the same direction as the quinhydrone potential so that readings indicate the solution to be more acid than is actually the case.

The colorimetric method is the simplest but is not as accurate particularly in cases where an excess of Al_2O_3 is present. As indicators, "Benzene-aniline" (abbreviation for potassium salt of p-benzolsulphonic acid-azo-benzylaniline), 1.9-3.3, "La Motte yellow," 2.6-4.2, are very suitable and give the same results as the electrometric methods. Bromphenol Blue, 3.0-4.6, can also be used and for all practical purposes is not affected by variations in specific gravity of solutions containing large excess of Al_2O_3.

Table II gives the results of some observations in the field adjacent to the neutral salt. The original material was an alum with a relatively large excess of Al_2O_3. By adding sulphuric acid to this solution a decreasing proportion of Al_2O_3 and an increasing proportion of SO_3 were obtained. The original solutions were successively diluted with water and specific gravity and pH determinations made on each solution to obtain the results shown in Table II and Fig.* 1.

TABLE II

EXCESS OF: SPECIFIC GRAVITY 18/18° C.

Al_2O_3 per cent	SO_3 per cent	1.06 pH	1.10 pH	1.14 pH	1.18 pH	1.22 pH
2.00	...	3.48	3.35	3.23	3.10	2.96
1.50	...	3.45	3.32	3.20	3.06	2.92
1.00	...	3.40	3.26	3.14	3.01	2.85
0.50	...	3.29	3.16	3.04	2.90	2.74
0.10	...	3.05	2.93	2.79	2.64	2.47
0.05	...	2.98	2.84	2.70	2.54	2.39
0	0	2.92	2.74	2.61	2.47	2.34
...	0.05	2.88	2.70	2.56	2.41	2.28
...	0.10	2.85	2.66	2.52	2.37	2.23
...	0.50	2.56	2.34	2.15	1.95	1.78
...	1.00	2.30	2.03	1.83	1.62	1.46

* Fig. 1 drawn to linear scale from data in Table II by the translator. Author presents Fig. 1 on semi-logarithmic graph.

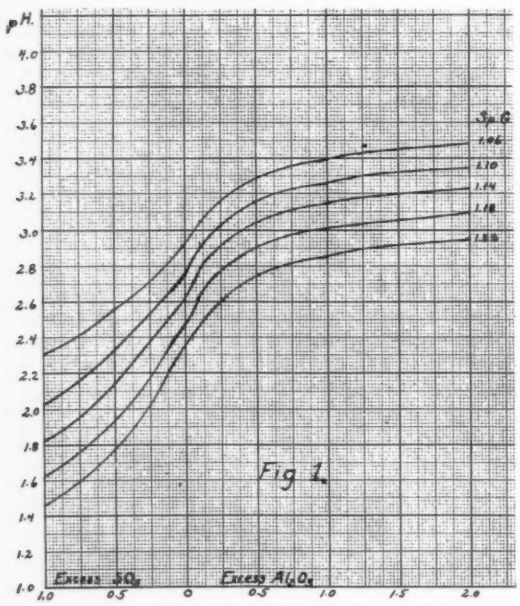


FIG. 1

Method of Analysis

From 60 to 70 grams of the alum sample is weighed out accurately, and dissolved in 200 grams water, also weighed. The solution is filtered and the specific gravity is determined by means of a pyknometer. The water-free alum content is found from Table I. pH. is determined and the excess Al_2O_3 or SO_3 is read off the graph (Fig. 1).

From the results thus obtained may be calculated the content of Al_2O_3, SO_3 and water, as well as the excess of Al_2O_3 or SO_3 over that present in the neutral salt.

Pulp Testing Rules

At a recent meeting of the Joint Committee on Approved Pulp Testing Chemists, it was decided to amplify and clarify Section 9 of the *Official Rules for Weighing, Sampling and Testing Wood Pulp for Moisture*, dealing with the question of retests in case of dispute between the buyer and seller of wood pulp. The need for the revision has been evident for a long time and although the revision does not change the intent of the rules, it is expected that there will be less confusion in the future in regard to some of the included details. Following is Section 9 as adopted by the Joint Committee representing the American Paper and Pulp Association, the Association of American Wood Pulp Importers and the Technical Association of the Pulp and Paper Industry.

9. RETESTS IN CASE OF DISPUTE

In case of dispute, a retest shall be made either by one approved chemist acting for and mutually agreed upon by both parties, or a joint test shall be made by approved chemists representing both parties and mutually agreed upon by them. In case of a joint test, both chemists or their authorized representatives shall be present during the sampling and weighing and subsequent testing of samples, but only one set of samples shall be obtained from the bales weighed and these samples shall be dried in an oven approved by both chemists. Retests coming within 1 per cent of the original air-dry weight of pulp as invoiced will be deemed to uphold the original invoice. When retests show a greater variation than 1 per cent, adjustment shall be made upon actual basis of such retest. In all cases expenses incidental to the retest shall be paid by the party in error.

NOTE: It is preferable that neither approved chemist in a joint test should be in the regular salaried employ of either interested party, but in the event that one or both of the approved chemists be a salaried employe in the service of either party, no charge shall be made for the services of such chemist or chemists.

Retests shall not be made on pulp which has been unduly exposed to the weather or other unusual conditions of moisture or heat, except by special agreement between shipper and consignee.

NOTE: Wherever possible, in all cases of dispute, the shipment should be kept intact and in no case shall there be less than 50 per cent of the lot presented for retest.

TAPPI Notes

Judson P. Smith, formerly of the Marathon Paper Mills and Kimberly-Clark Corporation, has joined the sales organization of the Hooker Electrochemical Company in New York.

Dr. Walter Brecht a member of TAPPI, formerly associated with Hammermill Paper Company, has recently accepted an invitation to become director of the Institute for Papermaking at the Technical University, Darmstadt, Germany. Dr. Brecht will succeed Prof. Friedrich Mueller, author of the well known series of handbooks on the technology and machinery involved in paper manufacture, who is now retiring after many years' connection with the University.

Paavo Kivi, who has been visiting many mills in America, sailed this week from Texas, to return to Finland, where he is to be night superintendent of the sulphite mill of Rauma Wood, Ltd.

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts and Bibliography of the Technical Association of the Pulp and Paper Industry

Clarence J. West, Chairman

For photostatic copies of articles appearing in the Abstracts Section, address the chairman of the Abstracts Committee, Dr. Clarence J. West, National Research Council, 21st and B Streets, Washington, D. C. The charge for this service is as follows: 9 x 11 inches, 18 cents each; 18 x 11 inches, 35 cents each; 22 x 18 inches, 70 cents each; minimum charge, 50 cents. Copies of United States patents may be obtained from the U. S. Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Sulphite Process

Safety Valves for Sulphite Digesters. C. Becker. Papierfabr. 28, No. 21: 352 (May 25, 1930).—A description of the various safety valves used with sulphite digesters, their advantages and disadvantages, are discussed. The mercury valve with its various modification is especially commented upon.—J. F. O.

Forced Circulation in Pulp Digesters With Special Reference to Sulphite Digesters. Arthur St. Klein. Zellstoff Papier. 10, No. 7: 481-488 (July, 1930).—The advantages of forced circulation are discussed, especially, saving in cooking time, lower temperatures possible, easier bleaching pulp, etc. The various processes now being investigated and tried out, such as, the Morterud process with inside circulation, the Hovey process with the circulation pipes outside the digester, the Wallin process with an ejector and a system of cooking having two or three digesters tied into one system, and the process according to Brobeck with an externally patented heater for the warming of the acid, are all described in detail. Brobeck made the very valuable discovery that if the liquor is forced through the heater at a high speed, there will be less incrustants formed on the heater tubes. The processes are then compared to each other.—J. F. O.

Uniformity of the Acid Inside of a Cooking Sulphite Pulp Digester. A. Ecke Papierfabr. 28, No. 18: 297-303 (May 4, 1930.) —When the steam is shut off the entire contents of the digest settle. A copper pipe was introduced into the digester from the bottom, the top of the pipe being closed although there were perforations in the pipe near the top. The acid in the bottom tested 7 to 8 per cent higher in sulphur dioxide content than at the sample cock. In the beginning of the cook, the lower acid is weaker than at the top of the digester. Near the end of the cook, the stronger acid is at the bottom of the digester. The results of numerous experiments are given.—J. F. O.

Sulphite Digester Linings. A. St. Klein, Zellstoff Papier 10, No. 10: 715, (October, 1930).—The first digester linings were made of lead with tar and pitch between the sheet of lead and the iron shell. However, this was soon abandoned since the coefficient of expansion of lead and iron led to the buckeling of the lead. A bronze digester was tried next, but since copper was given off making the pulp unfit for the use and several digesters became weakened and exploded, this was also discarded. Cement and acid proof brick were then tried. Since bisulphite goes over monsulphite upon heating, this latter product became a good protection for the iron shell against the action of the sulphur dioxide gases. This cement or litharge and glycerine together with acid proof brick method has been superceeded in the Scandinavian countries by an acid proof brick with a special cement; consisting of litharge, florite, feldspar, powdered glass and asbestos powder, the entire mass being mixed with water glass. The water glass combines with the bisulphite to form an insoluble monsulphite, silicic acid and calcium silicate. The asbestos is added to afford greater elasticity for the hardened morter, as well as to aid physically in the chemical formation. However, in using this morter, the first cook is made with calcium bisulphite only, no wood; in place of water which is used when the ordinary digester morter is used.—J. F. O.

Arrangement for the Usual Spiral Steam Coils for a Pulp Digester. A. Brobeck, Swed. pat. 68,986 (Nov. 26, 1927).—In order to prevent or hinder corrosion on the heat transfer surface of coils used in indirect cooking, occurring from the action of galvanic or electrical currents, screw fittings are provided at the connection where pipe ends come together and between these fittings and the end of the coil, collars made of an electrical insulating material are used, besides providing the pipe ends with flanges.—J. F. O.

Cooking According to the Mischerlich Process. J. F. Wochbl Papierfabr. 61, No. 31: 1008 (Aug. 2, 1930).—The author endeavors to disillusion the chemists and engineers who believe that a Mitscherlich cook is necessarily a long cook, by stating instances where good pulp has been cooked by the Mitscherlich process in a short time. In 1911, good pulp was produced by the Mitscherlich process in 12 hours at a pressure of .5 atmospheres, in 1915, there were cooks of 8 one-half to 9 hours at 6 atmospheres using 3.2 per cent total sulphur dioxide gas with a sulphur consumption of 9 one-half per cent. Although it is admitted that the coils etc. are expensive, a higher yield, lower raw material consumption, and a better grade of pulp is produced.—J. F. O.

Process for the Manufacture of Sulphite Pulp. Oskari Routala, Johan Sevon and Jalo Wuorinen. Fin. pat. 12,881 (July 23, 1928).—The wood is cooked with a mixture of acids obtained by precipitating the calcium from the sulphite liquor and the usual bisulphite cooking acid. The precipitation of the calcium can be carried out by treatment with alkali sulphite or alkali phosphate or even alkali sulphite which can be oxidized to sulphate.—J. F. O.

Manufacture of Sulphite Pulp from Resinous Woods with Simultaneous Extraction of Various By-Products. Karl Bergstroem. Papier 33: 935-944 (Sept., 1930).—Processes proposed for the production of sulphite pulp from resinous woods may be divided into two classes: (1) extraction of chips before cooking; (2) elimination of the resin during the cooking process. Though a large number of patents have been taken out for both classes of processes, none of them have so far been applied to the commercial pulping of these woods. The Bergstroem-Zennstroem process is claimed to possess all the requirements of a successful commercial process, and is essentially as follows: (a) *For wood having a maximum resin content of 7 per cent* The chips are treated with a dilute solution of alkali, first as atmospheric temperature and then at a higher temperature which may reach 110 degrees C. The solution contains sodium acetate, spirits of turpentine, pine oil, rosin soap and lignin; it is worked up for the production of pure aceyic acid, spirits of turpentine, pine oil, hard light-colored rosin and pure carbon. The chips are cooked in a sulphite digester in the usual way. (b) *For wood containing more than 7 per cent resin (7 per cent to 30 per cent)*: The chips are deresinified by means of hydrocarbons at 60 degrees to 80 degrees C., yielding as by-products spirits of turpentine, pine oil and resin. The extracted chips are then cooked by the sulphite process in the usual way. With wood containing up to 14 per cent resin, the process gives 47 to 50 per cent of oven-dry pulp containing 0.2 to 0.4 per cent resin

and about 2.5 per cent lignin, with production of only 0.2 to 1.3 per cent of knots. Bleaching requires 2 to 4 per cent of available chlorine and gives a pulp containing 0.3 to 0.4 per cent ash (the high ash content is due to the fact that a very hard water was used), 0.2 to 0.3 per cent resin, and 88.6 to 91.1 per cent alpha-cellulose and having a copper number of 2.60 to 3.10. The unbleached paper had a breaking length of 9,960 meters, a bursting strength of 7.53 and a chlorine number (Sieber) of 45.50. The corresponding values for the bleached paper were 6.800 meters, 4.57 and 96. Some of the advantages claimed for the process are as follows: under the same conditions it gives a purer cellulose than the processes at present in use, wood containing 6.7 per cent resins (alcohol-ether extract) readily gives an easy-bleaching pulp containing only 0.14 to 0.2 per cent resin, as compared with 0.6 per cent resin in Kipawa rayon sulphite; the ash content is very low, the cost of the preliminary treatment of the chips is more than covered by the value of by-products obtained, the elasticity and strength of the fibers are greater than those obtained by other processes; woods containing up to 30 per cent of resin can be treated; the pulp is better suited for the production of rayon than that obtained by previous processes; the consumption of heat and chemicals and the time for cooking are reduced; the partial elimination of lignin in the preliminary treatment reduces the loss of cellulose in the main cooking operation; the pulp is more easily converted into a high alpha-cellulose product; owing to the lower cooking temperature, cellulose of uniform viscosity is more easily produced, production of rayon pulp by other processes requires a double bleaching, while a single bleaching is sufficient with a present process, resulting in lower-bleach consumption, the process can be used as readily on green wood as on seasoned wood.—A. P.-C.

The Technique of Purifying Pulp: Effect of Calcium Lime in the Production of a Bleached Sulphite with a High Alpha-Cellulose Content. G. P. Genberg. Pulp Paper Mag. Can. 31, 199-210, 219 (Feb. 5, 1931).—By cooking bleached or partly bleached sulphite pulp with lime, the alpha-cellulose content of the final residue is increased appreciably, accompanied by a loss in weight depending principally on the original alpha-cellulose content. More than 5 to 10 per cent of lime (CaO) has no beneficial effect on the final results and on the loss in weight of the pulp. More than 70 per cent of the total increase in alpha content is effected in the first 4 hours at the consistency (4.5 per cent) and temperature (100-140° C.) used. The factor of most importance is the initial alpha-cellulose content, and in order to obtain, under most economical conditions, a final pulp with a maximum alpha content, it is necessary to start with a pulp treated so that a maximum alpha content is retained before lime treatment is started. A multiple treatment with lime has no increased effect on the alpha-cellulose content, but produces additional loss in weight. By omitting washing after bleaching and starting the lime treatment immediately after exhaustion of the bleach, a higher alpha-cellulose content is obtained. Practically the same alpha-cellulose content is obtained by treatment with 10 per cent calcium oxide and with 5 per cent caustic soda, but the lime-treated pulp has a lower copper number and suffers a higher loss in weight. The optimum conditions for maximum alpha-cellulose, minimum bleach consumption and minimum shrinkage were: unbleached sulphite is given a preliminary bleaching with a 2:1 bleach: chlorine number ratio, treated with lime, washed and given a final bleaching to a full white color with a 0.75:1 bleach:chlorine-number ratio. If the ratio of bleach to chlorine number is controlled to 2.0:1, the chlorine number of the unbleached pulp has no effect on the final alpha-cellulose content, but the shrinkage will be higher with increased chlorine number. The use of magnesia lime instead of calcium is of no advantage. The time to exhaust the bleach is prolonged and a lower alpha-cellulose content is obtained when the lime is added to the pulp at the same time as the bleach liquor and when the bleaching action is allowed to take place in the presence of the lime. Commercial trial runs made by the procedure developed in the laboratory produced a sulphite pulp with high alpha-cellulose content. Sulphate pulp is not affected to any extent by either calcium lime or sodium hydroxide under the conditions applied to sulphite pulp in the investigation.—A. P.-C.

Use of Sulphite Waste Liquor for Briquetting. Ludwig Weber. U. S. pat. 1,791,077, (Feb. 3, 1931).—Carbonaceous material is mixed with very finely divided clay possessing high plasticity, and the mixture is moistened with sulphite waste liquor.—A.P.-C.

Improved Sulphite Pulping Process. Ernst Schmidt. Fr. pat. 689,291.—Hardwoods and plants with high resin or silica contents, which cannot be satisfactorily cooked by the usual sulphite process, can be quickly and easily pulped by adding to the cooking liquor metals other than those belonging to the alkali and alkaline-earth groups, such as iron, silver, copper, aluminum, zinc, tin, lead, cobalt, nickel, chromium, manganese, and their salts or oxides; *e.g.*, 20 to 100 kilos of aluminum, nickel or zinc sulphate are added to 100 cubic meters of sulphite cooking liquor according to the nature of the raw materials to be cooked. —A.P.-C.

Bisulphite Process for the Cooking of Resinous Woods with Recovery of By-Products. A. F. Zennstrom and K. G. Bergstrom. Belg. pat. 370,447, (Aug. 31, 1930).—Before cooking, the resinous chips are treated with an alkaline liquor, and the resin may be recovered from the solution. The chips may, if necessary, be freed from oil of turpentine by treating with steam before treating with the alkaline liquor.—A. P.-C.

Wood-Pulping Process. George A. Richter assignor to Brown Co. U. S. pats. 1,787,953 and 1,787,954, (Jan. 6, 1931)—*No. 1,787,954*—Wood is cooked in a sulphurous acid liquor residual sulphurous acid groups in the liquor are oxidized (suitably by sodium hypochlorite or sodium peroxide) and the liquor is rendered alkaline (suitably by the addition of caustic soda) and the cellulose material is further cooked in the alkaline liquor. *No. 1,787,954* relates to a process in which the cellulose material is cooked in sulphurous acid liquor, the liquor is neutralized while the sulphur content is maintained in combined state, and alkaline substances including sodium sulphide are added to render the liquor alkaline, followed by further cooking of the cellulosic material in the alkaline liquor.—A.P.-C.

Cellulose Fiber from Sugar Cane. J. J. de la Roza, Sr. Fr. pat. 688,311, (Jan. 15, 1930).—The fiber is treated with a 4 to 5 per cent sulphur dioxide solution to inhibit the growth of fungi and spontaneous injury to the fiber (preferably after crushing and washing with hot water) and subsequently (after storage for several months if desired) the material is washed in hot water and treated under pressure with a dilute caustic soda or caustic potash solution at 140° to 170°C. (or at atmospheric pressure below 100°C. followed by beating), and is finally washed and bleached.—A.P.-C.

Production of Wood Pulp. Joseph H. Wallace assignor to Pine Waste Products, Inc. U. S. pat. 1,781,712, (Nov. 18, 1930).—The excess moisture is removed from a mass of wood chips by treating the mass with steam in the presence of heated gases, and the mass is then immediately transferred to the digester.—A.P.-C.

Production of Low-Viscosity Cellulose for Use in the Chemical Industry. Vereinigte Glanzstoff-Fabriken A.-G. Fr. pat. 686,489.—The cooking is conducted in such a manner as to obtain a low-viscosity pulp, or pulp produced in the usual way is treated so as to lower its viscosity, to such a point that the cellulose is practically instantly soluble in the usual solvents. Three examples are given. (1) Cook 190 kilos of pine sawdust containing 20 per cent moisture with 800 l. of sulphite liquor (4 per cent total sulphur dioxide, 1.2 per cent lime) by indirect steaming. Neither gas nor liquor is relieved, and cooking is continued regardless of pressure to a final temperature of 130°C. and until the cellulose has a viscosity of 4 units when tested by a method which is described in the patent. After washing, bleaching, washing and pressing, the cellulose is soaked in 10

times its volume of 10 per cent sodium hydroxide, pressed, washed, the soaking treatment is repeated, and after pressing, washing and drying there is obtained a pulp containing 97 per cent alpha-cellulose and having a viscosity of less than 4. (2) Bleached rayon-grade sulphite pulp, containing 87 per cent alpha-cellulose, and having a viscosity of 10 units, is soaked 24 hours in 10 volumes of 30 per cent sulphuric acid at 60°C. It is then drained, washed, purified with 15 per cent sodium hydroxide solution as in (1), washed and dried giving a product containing 97.5 per cent alpha-cellulose and having a viscosity of 4 units. (3) After bleaching, the pulp is washed, dewatered and poured into 12 volumes of caustic soda solution, cooled to 0°C. and of such concentration that, after addition of the cellulose, it contains 10 per cent caustic soda. A finely-divided current of air is slowly passed through the mass for 5 hours with moderate agitation; the cold solution is drained off, and the material is treated with 10 per cent caustic soda at atmospheric temperature as in (1), giving a product containing 95 per cent alpha-cellulose and having a viscosity half that of the original bleached pulp.—A.P.-C.

Improved Sulphite Pulping Process. Robert B. Wolf. U. S. pat. 1,772,792, (Aug. 12, 1930).—In order to retain the chief benefits of the use of acid accumulators, without the disadvantage of wide variations in pressure in the relief lines, two or more recovery tanks are used in conjunction with a small relief accumulator, the latter being connected preferably by separate relief lines to each individual digester. The gases and liquids are permitted to escape from the accumulator to the storage tanks through a pressure regulator, preferably a Locke regulator, thus maintaining a constant pressure in the accumulator and consequently in the relief lines. The liquor and gas from the accumulator may be cooled, either by passing through a coil immersed in the acid in each recovery tank, or by withdrawing the acid from the tank and circulating through a cooler.—A.P.-C.

Critical Investigation of the Technical Progress Made in a Mill Producing Sulphite Pulp; According to the Literature Appearing During the Past Year. Fr. Muller and Paul Walter. Wochbl Papierfabr. 61, No. 21; 669-672 (May 24, 1930).—The utilization of the by-products and the conversion of the waste liquor into valuable products, such as, alcohol are among the most promising. Seventy liters of alcohol are produced from 1,000 kilograms of bone dry pulp. Barium carbonate is better than lime for the neutralization of the waste liquor, since the barium salt is not harmful to the fermentable sugars present. In the evaporation of the sulphite waste liquors, an electrical process has been patented which prevents corrosion and the formation of incrustations. A system is described for the economical burning of waste sulphite liquor, from one ton of dry air pulp, 435 kilograms of combustible matter is obtained having a heating value of about seventy per cent that of coal. There is at present a factory in operation for the production of sulphite coal, but the economical results seem doubtful. The paper is mostly a review of methods for the utilization of the sulphite waste liquor.—J.F.O.

Process for the Continuous Manufacture of Pulp. Erich Laaser. Ger. pat. 499,010 (Dec. 11, 1926).—The raw materials and the liquor for the decomposition move in opposite direction. An enclosed digester with an open stand pipe serves for the cooker. According to the invention, the raw material runs into a funnel and then past a conical bell into the space to be filled. It then comes in contact with the rising steam in the stand pipe and is thereby moistened and warmed. The raw material sinks through the stand pipe in contact with the rising stream of cooking liquor and here giving up its remaining sulphur dioxide gas and excess heat. It travels slowly in the digester itself in order to be exposed to the stronger acids and higher temperatures. In order to lead off the eventual escaping free gas, a gas space is provided whose pressure is kept at a desired point by partly leading the gas over a pipe toward the acid tank and partly by opening the outlet valve for the consumed liquors. The heating of the liquors occurs through the use of steam coils within the digester and the finished pulp is led off through a sluice valve.—J. F. O.

Impregnation "Drenching" of Wood in Sulphite Cooking. Arthur St. Klein, Papierfabr. 28, No. 25A: 105-111. (June, 1930).—Mitscherlich secretly stated that the wood should be cooked as soon after it has been cut as possible, that is, before the sap of the tree changes to a rosin substance. In this manner a better penetration or diffusion within the cells is effected. The speed of penetration in the sap wood is about 100 times greater than in the heart wood and the speed in the axial direction is about 100 times greater than in the radial or tangential direction. According to Thorbjornson, a cubic meter of wood with 40 per cent moisture contains 405 liters air and with 20 per cent moisture it contains 582 liters, presumably Scandinavian spruce, picea silvestra. The article is a thorough summation of practically all the literature on the subject, references and curves are given.—J. F. O.

Process for the Manufacture of Cellulose. K. Yrjo Kylander. Nor. pat. 48,239 (March 9, 1928).—After previous drenching of the wood by cooking at increased temperature by means of gases and liquids, especially acid or alkaline gases or also solutions of acetates, phosphates or other solutions which react with the rosin and fats as well as other substances which produces a black cook, the wood is cooked with a sulphite cooking liquor at temperatures up to 150 to 170 degrees C or with a soda or sulphite cooking liquor at temperatures of 190 to 200 degrees C. and even higher temperatures.—J.F.O.

Wood Cellulose for Rayon Manufacture. Silk J. 7, No. 73, 51-53; No. 74, 42-43 (1930).—An outline of the process used in the Billeruds A/B mills, Saffle, Sweden.—A.P.-C.

Digestion of Wood by the Sulphite Process. Thomas L. Dunbar. U. S. pat. 1,781,447. (Nov. 11, 1930).—In the digestion of wood chips by the sulphite process, side relief liquor is caused to flow from a digester undergoing cooking directly into a digester undergoing filling, and the side relief liquor is utilized for packing the chips evenly in the digester.—A.P.-C.

Production of Sulphite Pulp. George A. Richter assignor to Brown Co. U. S. pat. 1,780,842 (Nov. 4, 1930).—Wood chips are cooked under pressure with a solution comprising sulphurous acid and ammonium sulphate, and which may contain other ammonium and sodium salts.—A.P.-C.

Sulphite Cooking Process. Robert B. Wolf. U. S. pat. 1,780,-638, (Nov. 4, 1930).—In the recovery of acid, a constant pressure is maintained in the side-relief line from the digester, the gases and liquids are cooled and are then discharged from the relief line into an acid absorbing medium.—A.P.-C.

Method of Circulating Liquor in Pulp Digesters. Einar Morterud. U. S. pat. 1,777,217, (Sept. 30, 1930).—A pump is mounted inside the digester. The suction side of the pump is connected to an annular perforated pipe, placed near the middle of the digester and supported at a distance from the wall. The pressure side of the pump is connected to pipes extending to near the top and bottom of the digester.—A.P.-C.

Circulation System for Pulp Digesters. Einar Morterud. U. S. pat. 1,779,283, (Oct. 21, 1930).—A reversible circulation pump is mounted inside the digester. Circulation tubes lead from the pump to the top and bottom, respectively, of the digester, and the outlets of the tubes are covered with screens to prevent wood or pulp from entering the tubes, which are used alternately as suction tube for the pump.—A.P.-C.

Concerning the Growth of Fungus on Sulphite Pulp and Its Adherent Injury to the Cellu-Fiber and Decomposition of Cellulose. Walter Drechsel, Dresden. Papierfabr. 28, No. 45, 709-713; No. 46, 729-736; No. 50, 848-854; 29. No. 1, 5-9, (1930-1931). —In the introduction the author mentions several facts of general interest concerning the growth of fungus. It attacks practically all organic substances in the presence of oxygen and

water, pure cellulose being more resistant than most substances. A comprehensive review of the literature written on fungus constitutes the second part of the article. The most optimum temperature for the growth of fungus is the so-called blood temperature, that is from 36 to 44 degrees C. Investigators are unanimous in that the fungus attacks cellulose more readily than lignin. In the manufacture of rag paper it was formerly the practice to allow the rag fiber to ferment, thus causing hydrolysis, which produced a better paper. There is however, an appreciable loss of fiber by this fermentation process. The third part of the article is given over to a description of fungi which are concerned with cellulose. The various fungi which dissolve cellulose with the formation of cellulose are described. A classification of fungi according to its color is also given. In the fourth part, the microscopical investigations made are discussed. In these experiments the cellulose was carefully inoculated and the fermentation process studied under the microscope. Numerous photographs and tables were made of the cellulose undergoing fermentation. The author next describes a method for determining the products of decomposition of cellulose when inoculated with various fungi, the carbon dioxide gas was absorbed and calculated, and the decomposition products were analysed. In conclusion the author gives a list of references.—J.F.O.

Process for the Purification of Suphite Pulp. Papeteries Navarre. Nor. pat. 47,578 (March 23, 1928).—In order to increase the alpha content of the cellulose, it first undergoes a mechanical purification in which the pulp is brought in a greatly diluted state over an inclined surface and subjected to sharp streams of water, free from earth alkalies. The cellulose then undergoes chemical purification with dilute caustic prepared from water free from earth alkalies and finally treated with dilute sulphuric acid to remove the mineral salts, and then washed.—J.F.O.

The Economic Possibility of Utilizing the Waste Heat from the Digesters in the Manufacture of Sulphite Pulp. R.v. Jaksch. Papierfabr. 29, No. 2, 25-26, (Jan. 11, 1931).—The author refutes an article by Schmid appearing in Papier-Fabr. No. 9, 1931, in which issue is taken with Schmid as regards the economic possibilities of utilizing the waste heat from the sulphite digesters.

Process for the Treatment of the Relief Gases from Cellulose Digesters in Absorption Towers. Metallbank & Metallurgische A.G. Aust. pat. 119,042 (April 15, 1930).—The interior of the absorption tower filled with lime stone is cooled so low that by regulating the calcium content of the recovered liquor the relief gases which contains readily condensed substances such as cymol, can be separated. The shower water and the gases from the digester can be cooled before entering the absorption tower in a refrigerator system.—J.F.O.

A Review of the German and Foreign Patent Literature Concerning the Utilization and Treatment of the Waste Liquor and Gases from the Manufacture of Pulp, (1925 to 1930), W. Schmid. Papier-Fabr. 28, No. 36, 573-575; No. 37, 587-590; No. 39, 620-623; No. 40, 636-639; No. 42, 671; No. 45, 717-719; No. 47, 744-746; No. 51, 875-877; 29; No. 1, 10-14; (1930-1931).—An exceedingly comprehensive review of the subject, which includes practically everything written and patented on the subject.—J.F.O.

Process for the Manufacture of Combustible Material from a Mixture of Wood Refuse and Sulphite Waste Liquor, as Well as the Combustible Material Prepared Through the Process. R. W. Strehlenert. Aust. pat. 117,832 (Jan. 15, 1930)—The mixture is so treated that the dried substance coming from the waste sulphur liquor contains from 25 to 60 per cent of dried matter. The mixture is dried to its drying limit and immediately thereupon subjected to a heat treatment at about 200 degrees C. for the purpose of obtaining an amorphous non-hygroscopic powder which is finally pressed into pellets.—J.F.O.

The Wasting or Utilization of the Sulphite Waste Liquor. W. Kuhles. Papier-Fabr. 28, No. 38: 604-607 (Sept. 21, 1930).—The author proposes to utilize the enormous quantities of sulphite waste liquor, which until now have been wasted because of unsuitable equipment to take care of same, by drying the waste liquor after previous thickening by using waste gases from the boilers, and burning the powder formed in its own furnace and making use of the heat obtained therefrom. The waste liquor containing about 90 per cent water is evaporated under vacuum to approximately 55 per cent and then dried to 92 to 95 per cent by direct contact with hot gases in an atomizer with the resulting powder burned in a furnace. The equipment for a sulphite mill and its operation is described together with drawings to illustrate the process. The author concludes the article by stating that not only is an insidious evil eliminated but a profit is made at the same time which is proven by the calculations made.—J.F.O.

Waste or Utilizing the Sulphite Waste Liquor. Max Steinschneider Papier-Fabr. 29, No. 1, 17, (1931).—The author refutes the facts and figures arrived at in a former article with the same title, Papier-Fabr. 28, No. 38, 604, concerning the utilization of sulphite waste liquor in producing a combustible powder. The process is not economically feasible.

Wasting or Utilization the Sulphite Waste Liquor. H. Kaselau. Papier-Fabr. 29, No. 1, 18-20; (Jan. 4, 1931).—Another article refuting the economic advisability of producing a combustible powder from the waste sulphite liquor.—J.F.O.

Progress Report on Sulphite Waste Liquor. Guy C. Howard. Ind. Eng. Chem. 22, 1184-1185 (Nov. 1930); Pulp Paper Mag. **Can.** 30: 665-666, (Dec. 11, 1930).—The Marathon Paper Mills Co., Rothschild, Wis., has undertaken an investigation of a new fractional precipitation treatment of sulphite waste liquor with a lime reagent, by which the liquor is separated into three primary products, (1) an inorganic product consisting largely of calcium sulphite for use in preparing fresh cooking acid, (2) an organic product consisting of lignin components and suitable for use as boiler fuel, (3) a tail-liquor effluent which carries the carbohydrate components for discharge to the sewer. Continuous operation during 4 months of a pilot plant, having a capacity about one-sixth that required for the treatment of the waste liquor from a 120-ton sulphite mill, showed that: (1) the process is commercially feasible to install and operate, (2) the values under Wisconsin conditions of the recovered products for making fresh cooking acid and for boiler fuel will carry the process and show some net profit, (3) the tail-liquor effluent from the process has much less oxygen demand than the untreated liquor and probably less toxicity. Equipment for the process comprises 4 reaction tanks, each of which has an accompanying settling tank, together with the necessary raw liquor and reagent storage tanks, pumps, filters and accessories. In the first reaction tank the pH value is raised by addition of lime to the desired point to obtain precipitation of calcium sulphite; the clear liquor decanted from the first settling is treated with further amounts of lime in the second reaction tank to precipitate the major portion of the lignin; further amounts of lime are needed in the third and fourth reaction tanks to complete the precipitation of the lignin, and the sludge from these last two treatments is used as the reagent added to tank No. 1. Biological oxygen demand tests indicated that the tail-liquor effluent shows at least 75%, and probably materially more, reduction in oxygen demand as compared with the untreated liquor. Uncompleted tests point to a similar reduction in the toxicity of the liquor after treatment. The radical reduction in oxygen demand effected by the fractional precipitation treatment is apparently due primarily to the removal of the lignin component and incidentally to the fact that the carbohydrates remaining in the tail liquor are evidently stabilized against oxidation by being organically combined with sulphur, *e. g.* as an aldhyde addition product, the ionization of which is in turn suppressed by other components of the system.—A.P.-C.

Section of the

COST DEPARTMENT

of the

American Paper and Pulp Association

Edited by T. J. Burke C. A. Director Cost Dept.

Excess Industrial Capacity*

Cooperative Exchange of Cost Information Among Competitors Should Minimize Waste

By W. M. Irish[1]

It has been alleged frequently that the productive capacity of all, or nearly all, of the world's basic industries exceeds by a wide margin the demand for their potential output. During 1929 the rate of increase over the preceding year of world production of cotton was ten times greater than the average annual rate of increase in production over the five-year period which ended in 1928; for rubber the 1929 rate of increase was three times greater; for pig iron, nearly two and one-half times greater; for petroleum twice as great; and one and six-tenths times greater for copper.

A Specific Illustration

The petroleum refining industry offers a specific illustration of excess capacity. According to the Bureau of Mines, as of January 1, 1930, the daily crude-running capacity of refineries in the United States aggregated 3,802,785 barrels. Probably, during 1930 the daily average consumption throughout will not exceed 2,550,000 barrels of crude oil, indicating an apparent excess capacity approximating 1,250,000 barrels, equal to about 50 per cent. of the capacity utilized. Stated otherwise, about 67 per cent. of the rated capacity of all refineries was employed during 1930.

An authority has stated recently that the potential production of crude oil in the United States is 10,000,000 barrels daily; and that the potential production of one field of comparatively limited area is 2,800,000 barrels daily. The latter amount is appreciably greater than the total current U. S. domestic and export crude oil demand, which approximates 2,400,0000 barrels.

Undoubtedly, in the petroleum industry, some unique conditions prevail which compel uneconomic development. They arise largely out of the relations which exist between royalty owners and lessees and to the migratory character of underground reserves. But justification cannot nullify the ill effects of over-production; nor can it lessen the burden of carrying charges on excess capacity during the period when the output of such facilities is shut-in or otherwise restricted.

Excess Retail Capacity

So far as the oil industry is concerned, over-expansion of facilities has been most conspicuous in the retail distribution of motor fuels and lubricants. Probably facilities now in use could render twice the volume of service currenly required of them. Operating labor costs of filling stations, which have been erected primarily for the purpose of dispensing gasoline and motor oils, probably are twice economic costs. Obviously, other operating expenses and charges on plant and equipment are excessisve in approximately the same ratio. A conservative estimate would indicate that operating expenses and fixed charges are not less than $75,000,000 per annum higher than they would be if "outlets" were proportioned economically to demand.

However, it is not to be assumed that over-expansion of marketing facilities for petroleum products has been more extensive than for other classes of merchandise. Whether judged by the relation between payroll and value of sales, or by the ratio of the number of outlets to the number of potential customers, oil marketing facilities compare not unfavorably with other common types of merchandising unit, viz: grocery stores, drug stores, etc.

Figures the Same for Other Basic Industries

No doubt for other basic industries in the United States the figures expressing the relation between capacity used and total capacity would be of the order of those quoted for petroleum refining. Moreover, the total industrial capacity appears to be excessive even in periods of maximum demand for its utilization. For example, during the intense industrial activity of the period from July 1928 to June 1929 the United States petroleum refinery throughout of crude oil approximated 75 per cent only, of the industry's rated capacity.

The effect of excess capacity on industry has been demonstrated repeatedly. It is twofold. In benevolent form, habitually non-operating excess capacity may enter production in periods of extraordinary demand and thus aid in supplying consumers, while at the same time exerting an influence for the prevention of a runaway market. In its usual and malevolent form, excess capacity continuously threatens the stability of prices and profits for all members of the industry of which it is a part. In the opinion of many persons, the current economic depression is essentially an effect of excess capacity. Hardly permitting of a dissenting opinion is the conclusion that excess capacity represents a waste of human energy in the creation of facilities beyond the need. Many plants idle and much machinery motionless even in periods of abnormal business activity speak eloquently in support of

* Executive Service Bulletin.
[1] President, The Atlantic Refining Co., Philadelphia, Pa.

this conclusion. It is conceivable that the costs to one industry of the inevitable scrapping of such excess capacity may be inordinate, while another industry, less inviting to capital, suffers for the lack of progress which new equipment makes possible. Herein lies the basis of an important disadvantageous effect of excess capacity, namely, that it may deter holders of capital from investing therein at the very time when capital is most needed to make possible technologic improvement.

Two Causes of Excess Capacity

Among numerous causes of excess industrial capacity appear prominently those economic influences which are beyond the control of specific industrial managements and those which arise from ineffective management. Illustrative of the first class is the case of an industrial unit so situated as to be adversely affected by the removal of markets or by depletion of previously economical sources of raw material. To the second class belong those numerous examples of industrial units whose facilities have not been modernized and which consequently have fallen back with respect to quality of product, or the cost of processing, or both. It is not unusual to find in a specific locality that an industry as a whole has expanded while certain units thereof have declined. In general, on the principle of the survival of the fittest, inefficient industrial capacity is idle because supplanted by more efficient units.

Expansion Absorbing Reserves

The cause of the inefficiency may be controllable or uncontrollable. In many lines of industry, differences in efficiency, or more accurately economy, from the highest to the lowest, appear to be very great. That a substantial range between low cost and marginal cost producers exists is evident from the profits reported by some units and the losses reported by others for the same fiscal period. Excess capacity naturally arises from the desire of low cost producers to expand at the expense of the markets of units uneconomically located or ineffectively managed. How much of excess capacity arises from the fact that reserves nominally set aside for depreciation or obsolescence have been expended for enlarged capacity instead of for plant efficiency, is problematic. But that some of the excess capacity arises from this cause can hardly be denied.

The last item in the foregoing brief discussion of the causes of excess industrial capacity suggests a possible, partial, solution of the perplexities created by excess capacity. Part of the excess is attributable to the creation of enlarged productivity with funds intended to restore original equipment to its initial worth (as an income producer.) *It is patent that certain portions of excess capacity must be scrapped ultimately.* Often such action results in the abandonment of entire plants, which have been superseded by modern and more efficient units, probably operated by managements unrelated to those of the abandoned plants.

There would be little progress if old and inefficient equipment were not replaced before it had literally worn out. If the tools of industry would not be improved and constructed more rapidly than they deteriorate there would be no need of scrapping of useful equipment. Should the process of abandonment be gradual or sudden. Should it take place by the current and continuous retirement of individual items of plant and equipment or by lump sum abandonment which now is the climax of bankruptcy?

Assuming that American industry will continue for some time to come as privately owned and operated, will it be possible through the acceptance of principles of rationalization, for competing units of an industry to cooperate to the end that there shall be an opportunity for most of the companies to survive? Such opportunities might be created *by the cooperative comparison of costs and operating expenses. If all of the units in a particular industry contributed currently, to a mutually controlled Cost Department,* data expressive of the results of the important items of their operations, such as cost of raw materials, operating expenses and charges, it would be possible for such Cost Department to issue currently a composite thereof.

Results of Cooperation

Each unit would be enabled to perceive readily whether its operations were keeping pace with those of all units collectively and might be guided by the results of its comparisons in shaping its productive, maintenance, and expansion programs. Obviously, this kind of cooperation would still leave opportunity for the more efficiently operated and better managed businesses to forge ahead, though no doubt pursued more closely by their competitors. But surely a better degree of stabilization would be attained and wastage through the abandonment of plants and equipment thereby might be minimized.

Cost and Technical Program

The following is the program for the Interstate meeting of the Kalamazoo Cost-Division of the American Paper and Pulp Association and the Paper Technologists Club of Kalamazoo to be held at the Park-American Hotel, Kalamazoo, Mich., May 22-23, 1931:—

Friday, May 22, 1931

10:00 A.M. Registrations
12:30 P.M. Luncheon and Joint Session — Glenn Ingling, Presiding
Address of Welcome — Mayor S. R. Light
Stabilization of Industrial Employment — L. C. Reynolds
2:30-5:00 P.M. Sectional Meetings.

COST SECTION
Frank Brown, Chairman
1—What's our Score? — Seth L. Bush
2—Coating Mill Cost Estimates — Harry A. Bradford and Glenn Ingling
3—Conference on Proposed Uniform Cost System

TECHNICAL SECTION
Elbert Milham, Chairman
1—Application of the Mathematics of Drying — D. W. McCready
2—Significance of Chemical Tests in Mill Control — Dr. Jesse Minor
3—Manufacture of Starch Products and Their Uses in the Paper Industry — Paul Torre

6:30 P.M. INFORMAL BANQUET
Music and Entertainment — Frank Libby, Presiding

Saturday, May 23, 1931

8:00 A.M.-12:00 M. Mill Visits, Golf, or Bowling.
12:30 P.M. Luncheon and Joint Session — M. D. Bardeen, Presiding
Story of Nitro-Cellulose — J. K. Speicher
Nomographic Charts — D. S. Davis
3:00-5:00 P.M. Sectional Meetings

COST SECTION
Harry Bradford, Chairman
1—The Board Converter's Problems — Harry C. Harvey
2—Financial Management in the Pulp & Paper Industry — Thomas J. Burke
3—Question Box

TECHNICAL SECTION
W. K. Kidder, Chairman
1—Observations of Chemical and Physical Aspects of Hydration — Dr. Otto Kress
2—Intelligent Selling is Profitable Selling — W. F. Nash
3—Question Box

Northeastern Superintendents to Meet

The Northeastern Division of the American Pulp and Paper Mill Superintendents Association will hold its spring meeting in the Bangor district on June 26 and 27, 1931. The program includes a golf tournament at the Penobscot Valley Country Club on Friday, an inspection of the new Seaboard Paper Company news print mill at Bucksport on Saturday morning, a meeting in Aubert Hall on Saturday afternoon at which a few interesting papers will be read, with illustrations by lantern slides and moving pictures, and a banquet at the Penobscot Valley Country Club, Saturday evening. On Saturday afternoon the new equipment used in pulp and paper courses at the University of Maine will be inspected. An attractive program for the ladies who will be present is also in preparation. The committee in charge of this meeting is composed of W. E. Parsons of the Keyes Fibre Company, Waterville; J. H. Harlow of the Penobscot Chemical Fibre Company, Great Works; W. D. Somerville of the Eastern Manufacturing Company, South Brewer, and C. A. Brautlecht.

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ACCESSIBILITY: **Removal and replacement of Seat Rings and Ball Plug effected without removing the body of the valve from the pipe line.**

ADJUSTABILITY: **Exact adjustment of the Seat Rings accomplished by a simple turn of the wedge adjusting screw.**

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Available in any metal that can be cast. Made in sizes ½" to 8" inclusive; ½" to 4" are lever operated; 4", 6" and 8" are worm-and-gear operated.

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SILICATE OF SODA

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No. 2 of series

WOOD PULP AGENTS

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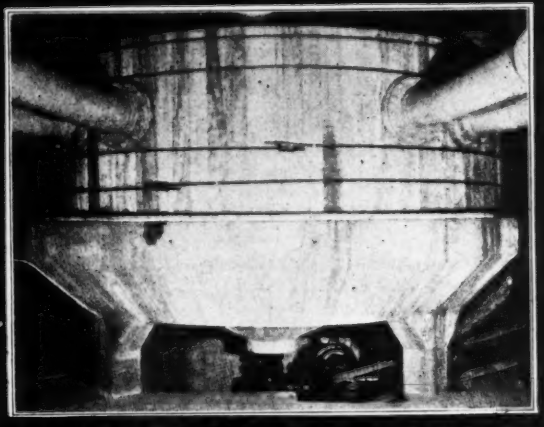
NEW YORK



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Wood Staves Fitted to Concrete Conical Bottom—A Paper Mill Installation.

All tanks are accurately made and only the best material and workmanship are used in their construction.

No tanks carried in stock—all tanks made to order for your special purpose.

Our shipping facilities are unexcelled and we are prepared to fill all orders quickly.

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The Hauser-Stander Tank Co., *Cincinnati, Ohio*

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING MAY 16, 1931

SUMMARY

Cigarette paper .....298 cs.
Wall paper .....18 bls., 15 cs.
Paper hangings .....1 truss, 1 ble., 1 cs.
News print .....113 bls., 5632 rolls
Printing paper .....37 bls., 21 rolls
Wrapping paper .....14 rolls, 10 cs.
Drawing paper .....18 rolls, 64 cs.
Filter paper .....2 bls., 21 cs.
Baryta coated paper .....101 cs.
Gold coated paper .....3 cs.
Basic paper .....2 cs.
Photo paper .....3 cs.
Coated paper .....80 cs.
Metal coated paper .....164 cs.
Decalcomania paper .....17 cs.
Writing paper .....10 cs.
Stencil paper .....6 cs.
Lapis paper .....1 cs.
Roof paper .....450 rolls
Cardboard .....193 cs.
Miscellaneous paper .....
.....8 pkgs., 46 rolls, 551 bls., 158 cs.

CIGARETTE PAPER

Brown & Williamson Tobacco Corp., Ile de France, Havre, 6 cs.
Liggett & Myers Tobacco Co., Ile de France, Havre, 43 cs.
Champagne Paper Corp., Sarcoxie, Havre, 248 cs.
P. J. Schweitzer, Pr. Garfield, Marseilles, 1 cs.

WALL PAPER

R. F. Downing & Co., Pr. Jackson, Kobe, 12 bls.
Corn Exchange Bank, Pr. Jackson, Kobe, 4 cs.
F. J. Emmerich, Adriatic, Liverpool, 3 bls.
J. E. Bernard & Co., Genl. von Steuben, Bremen, 1 cs.
W. H. S. Lloyd & Co., Amer. Trader, London, 3 cs., 1 ble.
Thomas & Pierson, Mauretania, Southampton, 1 cs.
Guaranty Trust Co., Hamburg, Hamburg, 5 cs.
R. F. Downing & Co., Hamburg, Hamburg, 1 ble.
J. E. Bernard & Co., Hamburg, Hamburg, 1 cs.
Globe Shipping Co., Hamburg, Hamburg, 1 ble.

PAPER HANGINGS

A. C. Dodman Jr., Inc., Scythia, Liverpool, 1 ble.
Whiting & Patterson Co., Inc., Mauretania, Southampton, 1 cs., 1 truss.

NEWS PRINT

——, Drottningholm, Gothenburg, 113 bls.
Lunham & Reeve, Malaren, Hango, 310 rolls.
Jay Madden Corp., Carplaka, Hango, 550 rolls.
——, St. Louis, Hamburg, 174 rolls.
Perkins, Goodwin & Co., Hamburg, Hamburg, 351 rolls.
A. S. Zabriskie, Pr. Harding, Hamburg, 45 rolls.
International Paper Co., Knut Hamsun, Dalhousie, 4202 rolls.

PRINTING PAPER

P. C. Zuhlke, Lapland, Antwerp, 10 cs.
Globe Shipping Co., Tomalva, Rotterdam, 15 cs.
E. Dietzgen & Co., Hamburg, Hamburg, 12 cs.
Perkins, Goodwin & Co., Hamburg, Hamburg, 55 bls.
Keuffel & Esser Co., Pr. Harding, Hamburg, 21 rolls.

WRAPPING PAPER

Standard Products Corp., Lapland, Antwerp, 14 rolls, 4 cs.
——, Amer. Trader, London, 6 cs.

DRAWING PAPER

H. Reeve Angel & Co., Inc., Amer. Trader, London, 7 cs.
Keuffel & Esser Co., Pr. Harding, Hamburg, 18 rolls, 57 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., Amer. Trader, London, 3 cs.
C. Schleicher Schull Co., Inc., Hamburg, Hamburg, 18 cs., 2 bls.

BARYTA COATED PAPER

Globe Shipping Co., Genl. von Steuben, Bremen, 101 cs.

GOLD COATED PAPER

Majestic Shipping & Fdg. Co., Genl. von Steuben, Bremen, 3 cs.

BASIC PAPER

J. H. Schroeder Banking Corp., Genl. von Steuben, Bremen, 1 cs.
J. H. Schroeder Banking Corp., Bremen, Bremen, 1 cs.

PHOTO PAPER

Globe Shipping Co., Lapland, Antwerp, 2 cs.
Medo Photo-Supply Co., Mauretania, Southampton, 1 cs.

COATED PAPER

W. A. Foster & Co., Olympic, Southampton, 1 cs.
Bank of America Natl. Assn., Hamburg, Hamburg, 5 cs.
Phoenix Shipping Co., Pr. Harding, Hamburg, 74 cs.

METAL COATED PAPER

Winter Wolff & Co., Innoko, Antwerp, 80 cs.
——, Hamburg, Hamburg, 8 cs.
Taub, Hummell & Schnall, Hamburg, Hamburg, 6 cs.
K. Pauli Co., Hamburg, Hamburg, 70 cs.

DECALCOMANIA PAPER

L. A. Consmiller, Bremen, Bremen, 5 cs.
C. W. Sellers, St. Louis, Hamburg, 2 cs.
C. W. Sellers, Hamburg, Hamburg, 10 cs.

WRITING PAPER

American Express Co., Lorain, Havre, 1 cs.
Distinctive Writing Paper Co., Ile de France, Havre, 9 cs.

STENCIL PAPER

Arlac Dry Stencil Corp., Hamburg, Hamburg, 6 cs.

LAPIS PAPER

N. McClelland, Inc., Mauretania, Southampton, 1 cs.

ROOF PAPER

Johns Manville Intl. Co., Pr. Garfield, Shanghai, 450 rolls.

CARD BOARD

American Express Co., Hamburg, Hamburg, 190 cs.
P. Seguin, Pr. Garfield, Marseilles, 3 cs.

MISCELLANEOUS PAPER

American Express Co., Bremen, Bremen, 125 cs.
Henschel, Naeve, Co., Bremen, Bremen, 2 cs.
Lunham & Reeve, Drottningholm, Gothenburg, 46 rolls, 8 pkgs.
Kraemer & Co., Drottningholm, Gothenburg, 146 bls.
Walker, Goulard, Plehn Co., Drottningholm, Gothenburg, 36 bls.
H. Reeve Angel & Co., Inc., Drottningholm, Gothenburg, 12 bls.
The Borregaard Co., Inc., Drottningholm, Gothenburg, 357 bls.
Keller, Dorain Paper Co., Ile de France, Havre, 17 cs.
G. E. Stechert, Ile de France, Havre, 7 cs.
Coenca Morrison Co., Ile de France, Havre, 7 cs.

RAGS, BAGGINGS, ETC.

D. M. Hicks, Inc., Lorain, Dunkirk, 19 bls. rags.
Darmstadt, Scott & Courtney, Lorain, Havre, 92 bls. jute waste.
International Trust Co., Lorain, Havre, 33 bls. rags.
V. Galaup, Lorain, Havre, 49 bls. bagging.
Brown Bros., Harriman & Co., Cameronia, Glasgow, 37 bls. rags.
Baring Bros. & Co., Cameronia, Glasgow, 37 bls. paper stock.
Amtorg Trading Corp., Yalza, Odessa, 936 bls. rags.
Castle & Overton, Inc., Tomalva, Rotterdam, 120 bls. rags.
International Trust Co., Tomalva, Rotterdam, 10 bls. bagging.
Irving Trust Co., Innoko, Antwerp, 154 bls. bagging.
S. Birkenstein & Son, London Citizen, London, 126 bls. paper stock.
Banco Coml. Italiana Trust Co., Hamburg, Hamburg, 40 bls. cotton nappers.
Katzenstein & Keene, Inc., Sarcoxie, Dunkirk, 84 bls. bagging.
E. J. Keller Co., Inc., Sarcoxie, ——, 109 bls. bagging.

OLD ROPE

Tupman, Thurlow & Co., Amer. Trader, London, 7 bdls.
Amtorg Trading Corp., Yalza, Odessa, 94 coils.
International Purchasing Co., Exermont, Genoa, 153 coils.

CASEIN

D. C. Andrews & Co., Ile de France, Havre, 117 bags.

WOOD PULP

Perkins, Goodwin & Co., Drottningholm, Gothenburg, 259 bls. sulphate.
E. M. Sergeant & Co., Drottningholm, Gothenburg, 598 bls. kraft soda pulp.
Russell McCandless, Drottningholm, Stockholm, 450 bls. unbleached sulphite.
——, San Fafael, Everett, 315 tons pulp.
A. P. W. Paper Co. (Albany), Dagali, Sheet Harbor, 9255 bls. wood pulp.
Castle & Overton, Inc., Hamburg, Hamburg, 1865 bls. wood pulp, 373 tons.
E. J. Keller Co., Inc., Capetown Maru, ——, 340 bls. wood pulp, 51 tons.

WOOD PULP BOARDS

Johaneson, Wales & Sparre, Inc., Genl. von Steuben, Bremen, 276 rolls.

PHILADELPHIA IMPORTS

WEEK ENDING MAY 16, 1931

J. W. Hampton, Jr., & Co., Carplaka, Hango, 53 rolls news print.
H. Reeve Angel & Co., Inc., Carplaka, Hango, 44 rolls news print.
Johnston Paper Co., Carplaka, Hango, 128 rolls news print.
Irving Trust Co., Carplaka, Hango, 614 bls. wood pulp.
Lagerloef Trading Co., Carplaka, Hango, 614 rolls wood pulp boards; 8900 bls. sulphite, 1690 tons.
Union Waste Co., Sarcoxie, Dunkirk, 24 bls. rags.
J. M. Hagy Waste Works, Sarcoxie, Dunkirk, 26 bls. rags.
E. J. Keller Co., Inc., Express, ——, 74 coils old rope; 70 bls. new rags; 268 bls. old rags.
E. J. Keller Co., Inc., Elmshorn, ——, 714 bls. wood pulp; 42 bls. old rags; 86 bls. bagging.
E. J. Keller Co., Inc., West Eldara, ——, 139 bls. new rags.

(Continued on page 58)

WOOD PULPS

All Grades

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CANADA CEMENT BUILDING
MONTREAL, P. Q.

FELTS thoroughly washed stay clean longer. Shut downs are less frequent . . . wear and tear are reduced.

That is why leading mills the country over have adopted the safe, thorough Oakite way of felt washing. Every trace of dirt and sizing is removed. Felts are left soft and absorbent, fibre unharmed.

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RELIEF and ACID VALVES
EXPERIMENTAL DIGESTERS
WELDED and RIVETED TANKS
DIGESTER STRAINERS
FINISHED FITTINGS
PIPE FABRICATION
WELDED BLOW PIPE
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HEAT EXCHANGERS
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We design and build special equipment to meet your requirements in
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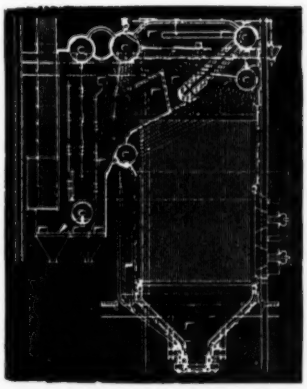

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installed in some of the largest pulp and paper mills in the United States and Canada

MAXIMUM STEAM
AT
HIGHEST EFFICIENCY
WITH
LEAST CAPITAL INVESTMENT and OPERATING COSTS

Result:—Enormous savings in cost of pulp and paper produced.

BADENHAUSEN CORPORATION
General Offices and Works
CORNWELLS HEIGHTS (PHILA.), PA.

Imports of Paper and Paper Stock

(*Continued from page 56*)

HOUSTON IMPORTS

WEEK ENDING MAY 16, 1931

Banco Coml. Italiana Trust Co., Tergesea, Venice, 475 bls. bagging.
Banco Coml. Italiana Trust Co., Tergestea, Naples, 113 bls. bagging.

NEW ORLEANS IMPORTS

WEEK ENDING MAY 16, 1931

Hibernia Trust Co., Tergestea, Venice, 277 bls. bagging.
Hibernia Trust Co., Tergestea, Trieste, 36 bls. rags.

NORFOLK IMPORTS

WEEK ENDING MAY 16, 1931

W. M. Stone & Co., Carplaka, Hango, 210 rolls news print.
Lagerloef Trading Co., Carplaka, Hango, 1200 bls. mechanical pulp, 240 tons; 375 bls. sulphate, 62 tons; 4382 bls. sulphite, 734 tons.

BALTIMORE IMPORTS

WEEK ENDING MAY 16, 1931

Congoleum Nairn Co., Lorain, Dunkirk, 81 bls. rags.
S. Shapira & Son, Lorain, Dunkirk, 150 bls. rags.
Maritime F'd'g. Co., Lorain, Havre, 139 bls. rags.
Congoleum Nairn Co., Lorain, Havre, 637 bls. rags.
New York Trust Co., Lorain, Havre, 50 bls. rags.
——, Lorain, Havre, 181 bls. bagging.
Congoleum Nairn Co., Innoko, Antwerp, 280 bls. rags.
W. H. Masson, Innoko, Antwerp, 43 coils old rope.
International Paper Co., Knut Hamsun, Dalhousie, 1155 rolls news print.

BOSTON IMPORTS

WEEK ENDING MAY 16, 1931

Lagerloef Trading Co., Malaren, Hango, 3478 bls. sulphite; 4641 bls. sulphate; 36 bls. wood pulp boards.
Atterbury Bros., Inc., Malaren, Hango, 1260 bls. sulphate.
Bulkley, Dunton & Co., Malaren, ——, 2500 bls. wood pulp.
——, Kerhonkson, Manchester, 116 bls. paper stock.
International Paper Co., Knut Hamsun, Dalhousie, 2157 rolls news print.
Atkinson, Haserick Co., Pr. Garfield, Genoa, 2 cs. paper.

PORTLAND, ME., IMPORTS

WEEK ENDING MAY 16, 1931

Lagerloef Trading Co., Malaren, Hango, 9321 bls. sulphite; 1126 bls. sulphate.

R. L. Galloway Made Plant Manager

SALEM, Ore., May 9, 1931.—The Western Paper Converting Company announces the resignation of Lloyd Riches as secretary and plant manager. Mr. Riches has accepted the position of district manager of the Hawley Pulp and Paper Company, with offices in the Robert Dollar Building, San Francisco, Cal.

Mr. Riches has been connected with the Western Paper Converting Company in an official capacity since its organization in the summer of 1925, for the first few months as sales manager and later as secretary and plant manager.

Mr. Riches is succeeded as plant manager by R. L. Galloway who for the past two years has been sales representative of the company. Mr. Galloway is the son of A. B. Galloway, sales manager of the Oregon Pulp and Paper Company and vice president and general manager of the Western Paper Converting Company.

L. H. Nye Goes With Parker-Young Co.

HOLYOKE, Mass., May 18, 1931.—Louis H. Nye of 57 Hitchcock street left today for Boston where he has joined the sales department of the Parker-Young Company of that city.

Mr. Nye entered the paper business twenty-three years ago with the American Writing Paper Company. Starting at the general offices, he later went to the Mt. Tom Company, Division, and in 1912 was transferred to the Chicago Sales office of the company. In 1917 Mr. Nye opened the Western sales office of Eastern Manufacturing Company in Chicago, where he remained the thirteen years following.

The Parker-Young Company, whose mills are in Lincoln, N. H., and whose product has been sold almost entirely to envelope manufacturers and other converters of paper, expects to make an announcement shortly which will be of particular interest to the paper merchants.

Boston Paper Market Fairly Steady

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 18, 1931.—As a whole, the paper market in the Hub is holding fairly steady, although reports vary. Some dealers deprecate conditions very much, but are hopeful for a better situation soon. A moderate amount of business is being transacted but some methods of selling are very much denounced. There is a great deal of criticism of what is regarded as unfair competition. Buying along standard lines has been rather satisfactory in volume, although purchasing is chiefly for immediate requirements in fine papers. There is also considerable inquiry. A greater improvement is expected next month, says a paper man, with more advertisements of summer schools, camps, and products for recreational uses in prospect.

The wrapping paper market has been fair, although a bit less active during the last week on account of rainy weather which has affected retail trade. Colored kraft shows a better price tendency and is recovering some of the lost ground. Box board dealers note that some business is coming in, but that the situation is none too good. Owing to considerable activity in the shoe industry the demand for carton materials for this purpose is at least fairly active.

A featureless paper stock market continues, with orders confined to immediate requirements. Foreign rags are in little or no demand, because there are enough of the domestic variety on hand to meet the needs of the roofing paper manufacturers. English dark cottons, now at 70 cents flat, will probably not go much lower, according to the trade.

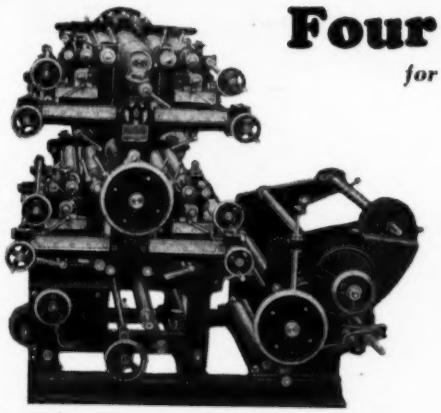
R. C. Johnson Made District Manager

R. C. Johnson has been appointed district manager for the Northwest Paper Company with headquarters at Chicago, Ill. This appointment was effective April 15.

During the past eighteen years Mr. Johnson has been associated with the International Paper Company in various capacities. At the time of his new appointment he was assistant Western sales agent.

Mr. Johnson was, for many years, in charge of the sale of papers to jobbers, converters, and magazine publishers, particularly in the western and central states. He has specialized in book papers and sulphite specialties.

Due to this board and diversified experience, Mr. Johnson is unusually well qualified to undertake his new duties.



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for Printing Cellophane, Glassine, Paper Bag Stock, etc.

Prints on web, at tremendous speeds, without danger of offset, sticking, or smearing. Can be attached to the fastest bag machines, without slowing up production, or can be equipped with re-reeling device for use as a separate unit. Web can be slit into strips after printing, and a sheeter can also be furnished for cutting up the web and delivering in sheets. Made in five sizes, with maximum reel widths from 22" to 55". Also furnished for printing in two or three colors.

This press is manufactured by Windmoller and Holscher, who are also manufacturers of the well-known Matador Bag Machine, widely used in this country and throughout the world for the past sixty years. It can be seen in operation in our new enlarged quarters, 200 Varick Street, New York.

Also Manufacturers of High Grade Aniline Inks

H. H. HEINRICH, INC., 200 VARICK ST., NEW YORK

White Tile
Acid Tank
LININGS

Blow Pit
Jenssen Tower
Combustion Chamber
LININGS

Sulphite, Soda and Kraft
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LININGS

Protect your equipment
with Stebbins Bonded
LININGS

STEBBINS
Engineering
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WATERTOWN, New York SEATTLE, Washington

West Virginia Pulp and Paper Company

Manufacturers of

SUPERCALENDERED
and
MACHINE FINISHED BOOK and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing Cover and Music Paper, High Grade Coated Book, Index Bristol, Post Card, Kraft and Label Papers

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LAND O'LAKES CASEIN

High quality Casein made under strict laboratory control. Excellent solubility. Satisfactory viscosity. Write for sample and quotations.

LAND O' LAKES CREAMERIES, INC., MINNEAPOLIS, MINN.
New York City - Chicago - Boston - Philadelphia - Pittsburgh - Syracuse

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, May 20, 1931.

Business in the local paper market was rather quiet during the past week. Demand for the various standard grades of paper was mostly along routine lines. Sales forces of the leading paper organizations are keeping up their efforts to secure orders and are fairly optimistic. Prices are generally holding to formerly quoted levels.

News print paper production in the United States and Canada is being maintained at approximately 62 per cent of rated capacity, according to information gathered by the News Print Service Bureau. Shipments proceeded at 70 per cent of rating during the past week. The price situation is practically unchanged, although efforts are still being made to stabilize the industry.

Some improvement was noticed in the paper board market. Box board mills are operating at slightly under 70 per cent of capacity and are practically keeping pace with orders. Prices remain unaltered. The fine paper market was only moderately active. Prices continue fairly steady, however. The coarse paper market is irregular, although wrapping paper is going forward in satisfactory volume for the season.

Mechanical Pulp

Trading in the ground wood market was light. Offerings of both domestic and imported mechanical pulp are about sufficient to take care of immediate requirements. Inquiries for future needs are being received in moderate volume. Prices are generally holding to schedule and there is little talk of concessions around.

Chemical Pulp

The Norwegian pulp mill workers strike continues. The chemical pulp market in this country has not been much affected, however, as the tonnage imported is very small. Demand for the various grades of imported and domestic chemical pulp is slightly better than of late. Prices are holding to schedule, in most instances.

Old Rope and Bagging

Little interest is being shown by the paper mills in the old rope market at present. Both domestic and imported old manila rope continue quiet. Small mixed rope is going forward in fair volume. No radical price changes have been recorded. The bagging market is fairly active. Scrap and roofing bagging are in good request, although gunny bagging is dull.

Rags

The domestic rag market is rather spotty. Demand for cotton rags is only moderate. Roofing rags, however, are in persistent request. Mixed rags are moving in a fairly satisfactory manner, considering the prevailing business depression. Prices on the various grades of domestic rags are nominal. Demand for imported rags is light, with the exception of roofing grades, which are in seasonal request.

Waste Paper

Board mills are displaying a little more interest in the lower grades of paper stock, especially in No. 1 mixed paper. Offerings of this grade are limited and prices are firmer than for some time past. The higher grades of waste paper are somewhat quieter, although prices are practically unaltered.

Twine

Conditions in the local twine market are practically unchanged. Demand for the various grades is mostly routine. Supplies are going forward in fairly satisfactory volume for the time of year. Prices are generally holding to formerly quoted levels and reports of shading are infrequent.

Receivership for Dard Hunter Associates

Acting on the application of the National City Bank, through James A. Stevenson Jr., of Shearman and Sterling, counsel for the bank, Judge Hincks, of the United States District Court at New Haven, Conn., appointed Ten Eyck R. Beardsley and Harry A. Beach receivers in equity for Dard Hunter Associates on May 15, 1931.

This is a friendly receivership designed to enable the company to work out its financing problem in the most economical way. Mr. Beach has been secretary of the corporation since the beginning and Mr. Beardsley is a New York lawyer of practical experience in matters of real estate and paper making.

The mill of the corporation at Lime Rock, Conn.—the only maker of handmade paper in the United States—has during the past twelve months gone through the experimental development necessary in the making of a new product in this country.

An all rag sheet of exceptionally high quality, which has met with the enthusiastic approval of printers, etchers and other special users, has been produced, and orders now on hand and in sight are expected to insure continued operation.

The master vatman at the Lime Rock mill is Robert Robertson, brought up in the highest traditions of English hand-made paper making, assisted by his sons, Thomas and Reginald, while the drying and finishing of the paper is under the direction of John King, who has successfully mastered this difficult technique.

To Discuss Foreign Trade Opportunities

In connection with the meeting of the National Foreign Trade Council, which will be held at the Hotel Commodore, New York, May 27 to 29, the American Paper and Pulp Association is arranging a luncheon for those of the industry who are interested in developing larger sales of American paper in foreign countries, which will take place in the Hotel Commodore, at 12:30 p. m., Wednesday, May 27. The program will consist of talks and discussion on opportunities and successful methods for the sale of our paper abroad. The tax will be $2.50 per person.

Union Screen Plate Company

Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE

SCREEN PLATES FOR FLAT SCREENS

6 SLOTS—5 SLOTS—4½ SLOTS—4 SLOTS—PER INCH

Old Plates Reclosed and Re-cut to Accurate Gauge
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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, May 20, 1931.

BLANC FIXE.—Conditions in the blanc fixe market are practically unchanged. Prices are generally holding to former levels. The pulp is offered at from $42.50 to $45 per ton, while the powder is selling at from 3¾ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—The bleaching powder market is moderately active. Contract shipments are going forward in good volume. Prices remain steady and unchanged. Bleaching powder is quoted at from $2 to $2.35 per 100 pounds, in drums, at works, according to grade.

CASEIN.—Business in the casein market is irregular. Domestic standard ground is quoted at 7½ cents and finely ground at 8½ cents per pound. Argentine standard ground is quoted at 9 cents and finely ground at 10 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—The caustic soda market is rather quiet. Prices are holding to schedule, however. Solid caustic soda is quoted at from $2.50 to $2.55, while the flake and the ground are selling at from $2.90 to $2.95 per 100 pounds, in large, drums, at works.

CHINA CLAY.—Little change was noticed in the china clay market. The contract movement is seasonal. Prices remain unchanged. Imported china clay is quoted at from $13 to $21 per ton, ship side; while domestic paper making clay is selling at from $7 to $11 per ton, at mine.

CHLORINE.—The chlorine market is displaying a steady trend. Supplies are moving into consumption at a normal pace. Prices are holding to formerly quoted levels. Chlorine is selling at $2.50 per 100 pounds, in tanks, or multi-unit cars, in large drums, at works.

ROSIN.—No radical changes were reported in the rosin market. The grades of gum rosin used in the paper mills are quoted at from $5.95 to $6.35 per 280 pounds, in barrels, at yards. Wood rosin is selling at $4.30 per 280 pounds, in car lots, at southern shipping points.

SALT CAKE.—Offerings of salt cake are sufficient to take care of prevailing requirements. Prices are holding to schedule. Salt cake is quoted at from $16 to $17; German salt cake at from $15.50 to $16; and chrome salt cake at from $14 to $15 per ton, in bulk, at works.

SODA ASH.—DEMAND for soda ash is fairly active. The contract movement is mainly seasonal. Prices remain steady and unchanged. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1; in bags, $1.15; and in barrels, $1.38.

STARCH.—The starch market is exhibiting a strong undertone. Contract shipments are going forward in good volume. Prices are generally holding to schedule. Special paper making starch is selling at $2.67, in bags; and at $2.94 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Contract shipments of sulphate of alumina are going forward to the paper mills with regularity. Commercial grades are still quoted at from $1.25 to $1.40; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—Steadiness prevails in the sulphur market. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton for any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Most of the business transacted in the talc market was routine. The contract movement is normal. Prices are unchanged. Domestic talc is quoted at from $16 to $18 per ton, in bulk; while imported talc is selling at from $18 to $22 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	11.00	@	38.00
Bonds	6.75	@	53.25
Writings—			
Extra Superfine	14.00	@	32.00
Superfine	14.00	@	32.00
Tub sized	10.00	@	15.00
Engine sized	6.75	@	11.00
Book, Cased—			
S. & S. C.	5.25	@	—
M. F.	5.00	@	—
Coated and Enamel	6.75	@	10.25
Lithograph	7.25	@	11.75
Tissues—Per Ream—			
White No. 1	.65	@	.70
Anti-Tarnish M G only	.65	@	.70
Colored	.70	@	.90
White No. 2	.55	@	.60
Kraft	.65	@	.70
Manila	.55	@	.60
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.09¼	@	—
No. 2	.11¼	@	—
Bleached, basis 20 lbs.	.11¼	@	—

(Delivered New York)

News, per ton—			
Rolls, contract	57.00	@	—
Rolls, spot	57.00	@	—
Sheets	62.00	@	—
Side Runs	42.00	@	46.00
Kraft—			
No. 1 Domestic	4.25	@	5.38
No. 2 Domestic	3.50	@	4.00
Southern	3.50	@	4.00
Imported	6.00	@	7.00
Boards—per ton—			
News	32.50	@	35.00
Straw	40.00	@	45.00
Chip	30.00	@	32.00
Binders' Boards	65.00	@	70.00
Standard 85 Test Liner	32.50	@	35.00
Sgl. Mla. LL Chip	42.50	@	45.00

(F. o. b. Mill)

Wood Pulp Boards	70.00	@	80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—			
Moist	28.00	@	32.00
Dry	30.00	@	34.00

(F. o. b. Mill)

No. 1 Domestic	28.00	@	34.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	2.60	@	4.00
Easy Bleaching	2.15	@	2.35
No. 1 strong unbleached	2.00	@	2.35
Mitscherlich unbleached	2.10	@	2.70
No. 2 strong unbleached	1.90	@	2.00
No. 1 Kraft	1.40	@	1.75
No. 2 Kraft	1.35	@	1.55
Sulphate—			
Bleached	2.75	@	3.25

(F. o. b. Pulp Mill)

Sulphite (Domestic)—			
Bleached	2.40	@	4.75
Easy Bleaching	2.55	@	2.75
News	1.80	@	2.50
Mitscherlich	2.40	@	3.15
Kraft (Domestic)	1.60	@	2.75

Delivered Paper Mills)

Soda Bleached	3.00	@	—

Domestic Rags

New Rags

(Prices to Mill f. o. b N. Y.)

Shirt Cuttings—			
New White, No. 1	7.00	@	7.45
New White, No. 2	6.00	@	6.50
Silesias No. 1	5.25	@	5.50
New Unbleached	7.25	@	7.75
New Blue Prints	4.00	@	4.50
New Soft Blacks	3.50	@	4.00
Blue Overall	5.25	@	5.50
Washables	3.50	@	3.75
Fancy	3.75	@	4.00
Mixed Khaki Cuttings	4.00	@	4.50
Pink Corset Cuttings	6.00	@	6.50
O. D. Khaki Cuttings	5.00	@	5.25
Men's Corduroy	3.00	@	3.50
New Mixed Blacks	3.00	@	3.25

Old Rags

White, No. 1—			
Repacked	5.25	@	5.75
Miscellaneous	4.25	@	4.75
White, No. 2—			
Repacked	3.00	@	3.50
Miscellaneous	2.30	@	2.50
St. Soiled, White	1.50	@	1.75
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.65	@	1.85
Black Stockings	3.25	@	3.75
Roofing Rags—			
Cloth Strippings	1.25	@	1.30
No. 1	1.25	@	1.30
No. 2	.90	@	1.00
No. 3	.70	@	.80
No. 4	.65	@	.70
No. 5A	.50	@	.60

Foreign Rags

New Rags

New Dark Cuttings	2.00	@	2.15
New Mixed Cuttings	2.10	@	2.40
New Light Silesias	5.00	@	5.38
Light Flannelettes	5.00	@	5.25
Unbleached Cuttings	7.00	@	7.50
New White Cuttings	6.50	@	6.75
New Light Oxfords	5.00	@	5.50
New Light Prints	3.50	@	3.75

Old Rags

No. 1 White Linens	6.50	@	6.75
No. 2 White Linens	5.75	@	5.25
No. 3 White Linens	4.00	@	4.50
No. 4 White Linens	2.50	@	3.00
No. 1 White Cotton	4.50	@	5.00
No. 2 White Cotton	3.50	@	4.25
No. 3 White Cotton	2.50	@	3.25
No. 4 White Cotton	1.50	@	1.75
Extra Light Prints	2.50	@	2.75
Ord. Light Prints	2.00	@	2.25
Med. Light Prints	1.65	@	1.75
Dutch Blue Cottons	1.80	@	1.90
French Blue Linens	2.50	@	2.60
German Blue Linens	2.25	@	2.40
German Blue Cottons	1.75	@	1.85
Checks and Blues	1.60	@	1.75
Lindsay Garments	1.10	@	1.20
Dark Cottons	.80	@	.90
Old Shopperies	.75	@	.80
New Shopperies	.75	@	.80
French Blues	1.80	@	1.90

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.65	@	1.80
Domestic	1.65	@	1.80
Wool Tares, light	1.25	@	1.30
Wool Tares, heavy	1.25	@	1.30
Bright Bagging	1.20	@	1.30
Small Mixed Rope	.90	@	1.00
Manila Rope—			
Foreign	2.00	@	2.15
Domestic	2.10	@	2.25
New Burlap Cut	1.80	@	1.90
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
Hard, white, No. 1	2.75	@	2.85
Hard White, No. 2	2.20	@	2.30
Soft, white, No. 1	2.20	@	2.30
White envelope cuttings	2.60	@	2.70
Flat Stock—			
Stitchless	.85	@	.95
Overissue Mag	.85	@	.95
Solid Flat Book	.75	@	.85
Crumpled No. 1	.60	@	.65
Solid Book Ledger	1.75	@	1.85
Ledger Stock	.80	@	.85
New B. B. Chips	.20	@	.30
Manilas—			
New Env. Cut	2.00	@	2.30
New Cuttings	1.50	@	1.65
Extra No. 1 old	1.20	@	1.30
Print	.50	@	.60
Bogus Wrapper	.50	@	.60
Container	.25	@	.30
Old Kraft Machine—			
Compressed bales	1.10	@	1.20
News—			
No. 1 White News	1.60	@	1.70
Strictly Overissue	.40	@	.46
Strictly Folded	.30	@	.35
No. 1 Mixed Paper	.15	@	.25
Common Paper			Nominal

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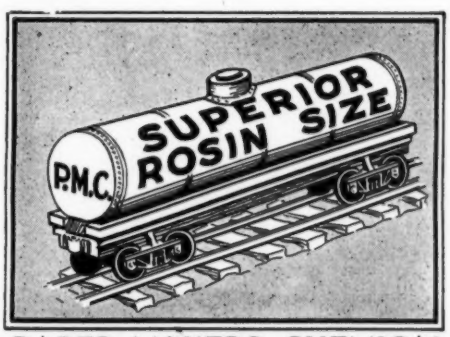

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CLAYTON, NEW JERSEY

Twines
(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.32	@	.34
No. 1	.22	@	.24
No. 2	.21	@	.22
No. 3	.19	@	.20
A. Italian, 18 basis	.38	@	.39
Finished Jute—			
Dark 18 basis	.20½	@	.21
Light 18 basis	.22½	@	—
Jute Wrapping, 3-6 Ply—			
No. 1	.14¾	@	—
No. 2	.13¾	@	—
Tube Rope—			
4-ply and larger	.10¼	@	—
Fine Tube Rope—			
4-ply	.12¾	@	—
3-ply	.13¾	@	—
2-ply	.14¾	@	—
Paper Makers Twine Balls	.08¾	@	—
Box Twine, 2-3 ply	.09	@	.10
Jute Rope	.11	@	.12
Amer. Hemp, 6	.29	@	.31
Java Sisal			
No. 1 Basis	.12	@	—
No. 2 Basis	.11¾	@	—
New Zealand Sisal	.11½	@	—
Sisal Lath Yarn—			
No. 1	.14	@	.16
No. 2	.12	@	.14
Manila Twine	.22½	@	.24½

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¾
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¾
No. 2 M. F. Book	.05¼	@	.06¾
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¼	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	5.00	@	5.50
Southern Kraft	3.75	@	4.00
No. 2 Kraft	3.75	@	4.00
Wood Tag Boards	.04¼	@	.06¾
Sulphite Screenings	.03	@	.03¾
Manila Tissue	.07	@	.07¾
White Tissue	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	62.00	@	—
Sheets	67.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.40
White Env. Cuttings	—	@	—
No. 1 Soft Shavings	2.10	@	2.15
Ledger & Writings	.70	@	.75
Solid Books	.75	@	.80
Blanks	1.60	@	1.65
Krafts	1.25	@	1.35
New Kraft Cuts	1.35	@	1.45
Manila Env. Cuts	1.50	@	1.55
Ex No. 1 Manila	1.25	@	1.30
Print Manila	.40	@	.45
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.35	@	.40
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.28	@	.30
No. 2	.20	@	.25
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	25.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.05	@	.40
Ledgers	.07	@	.40
Writings—			
Superfine	.12	@	.18
Extra fine	.16	@	.22
Fine	.15	@	.26
Fine, No. 2	.13½	@	.25
Fine, No. 3	.08½	@	.20
Book, M. F.	.05	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.08	@	.16
Coated Lithograph	.07	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.03¼	@	.05½
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03½	@	.04
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.03½
Common Bogus	.03	@	.04
(Delivered Philadelphia)			
News Print Rolls	62.00	@	—
Straw Board	50.00	@	—
News Board	32.50	@	—
Chip Board	30.00	@	—
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	75.00	@	—
No. 2, per ton	68.00	@	—
Carload lots	66.00	@	70.00
Tarred Felts—			
Regular	55.50	@	57.00
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.07	@	.08
New White, No. 2	.06	@	.06½
Light Silesias	.05½	@	.06
Silesias, No. 1	.07	@	.09
Black Silesias, soft	.05	@	—
New Unbleached	.07½	@	.08
Washable, No. 1	.03½	@	.04
Blue Overall	.06	@	—
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.02½	@	.03
Fancy	.04	@	—
New Black Soft	.04	@	.05
New Light Seconds	.02	@	.02½
New Dark Seconds	1.25	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.05	@	—
No. 2 Mixed	.04	@	.04¼
Corduroy	.02½	@	.03
New Canvas	.07½	@	.08
New Black Mixed.	.03	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	3.50	@	4.00
Miscellaneous	3.00	@	3.50
M. G.	5.00	@	—
Thirds and Blues—			
Miscellaneous	1.50	@	1.75
Repacked	2.00	@	2.25
Black Stockings (Export)	3.80	@	4.00
Roofing Stock—			
Foreign No. 1	1.15	@	1.25
Repacked	.80	@	.90

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	2.75	@	3.00
Sisal Rope	1.25	@	1.50
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.60	@	2.65
No. 2 Hard White	2.30	@	2.35
No. 1 Soft White	2.25	@	2.50
No. 2 Soft White	1.40	@	1.60
No. 1 Mixed	.90	@	1.00
No. 2 Mixed	.60	@	.70
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.05	@	1.25
No. 1 Books, heavy	1.00	@	1.15
No. 2 Books, light	.90	@	.95
No. 1 New Manila	2.15	@	2.30
No. 1 Old Manila	1.50	@	1.60
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.25	@	1.30
Common Paper	.25	@	.30
No. 1 Mixed Paper	.25	@	.30
Straw Board, Chip	.35	@	.40
Binders Board, Chip	.35	@	.45
Corrugated Board	.50	@	.60
Overissue News	.40	@	.45
Old Newspaper	.25	@	.30

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag Content	.15	@	.30
All Rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05½
No. 2 Kraft	0.3½	@	.04¾
(F. o b. Boston)			
Southern Kraft	.03½	@	.03¾
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¾
Delivered New England points			
News Print, rolls	61.50	@	—
Straw Board, rolls	.009	—	@52.50
Straw Board in Sheets, basis 35s to 70s	—	@	50.00
Filled News Board	32.50	@	—
Chip Board	30.00	@	—
Chip Board (Creasing)	32.50	@	—
Single Manila Lined Chip	45.00	@	—
Single White, Patent Coated News Board			
Bender, No. 1	60.00	@	75.00
Bender, No. 2	55.00	@	65.00
Wood Pulp Board	75.00	@	80.00
Binder Boards	67.50	@	75.00

Old Papers
(F.'o. b. Boston)

Shavings—			
No. 1 Hard White	3.25	@	3.75
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.25	@	2.40
No. 1 Mixed	.90	@	1.00
No. 2 Mixed	.60	@	.65
Solid Ledger Books	1.75	@	2.00
Overissue Ledger Stock	1.35	@	1.60
Mixed Ledgers	1.15	@	1.30
No. 1 Books, heavy	.75	@	.90
No. 1 Books, light	.55	@	.70
Crumpled Stitchless Book Stock	1.00	@	1.25
Manila Env. Cuttings	1.85	@	2.00
No. 1 Old Manila	—	@	1.00
White Blank News	1.50	@	1.60
Kraft No. 1	—	@	1.10
Manila	.80	@	.90
No. 1 Mixed Paper	—	@	.16
Overissue News	—	@	.40
Old Newspapers	.25	@	.30
Box Board, Chip	.16	@	.20
Corrugated Boxes	.35	@	.45

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	—	@	1.80
Domestic	1.60	@	1.70
Manila Rope—			
Foreign	—	@	2.00
Domestic	2.50	@	—
Transmission Rope	1.75	@	—
Mixed Strings	—	@	.70
Jute Rope	1.25	@	—
Jute Carpet Threads	.90	@	1.05
Bleachery Burlap	—	@	3.25
No. 1 Scrap Burlap	—	@	1.25
Scrap Sisal	1.40	@	1.50
Scrap Sisal for shredding	1.50	@	1.60
Wool Tares, heavy	1.30	@	—
New Burlap Cutting	1.75	@	2.00
Australian Pouches	2.50	@	—
Heavy Baling Bagging	—	@	1.75
Paper Mill Bagging	.95	@	1.10
Bagging No. 2	.50	@	—
No. 1 Burlap	—	@	3.50

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.06½	@	.07
New White No. 2	—	@	.06
Silesias No. 1	.06	@	.06¼
New Black Silesias	.02½	@	.02¾
New Unbleached	—	@	.08
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades			
Blue Overalls	.05	@	.06
New Black, soft	.04	@	.04¾
Khaki Cuttings	.04	@	.04¾
O. D. Khaki	.04½	@	.05
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	—	@	4.00
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.50	@	2.75
Thirds and Blues—			
Repacked	1.60	@	1.80
Miscellaneous	1.00	@	1.20
Black Stockings	3.25	@	3.50
Roofing Stock—			
No. 1	.75	@	.80
No. 2	.65	@	.70
No. 3	.50	@	.60

Foreign Rags
(F. o. b. Boston)

Dark Cottons	—	@	.75
New No. 1 White Shirt Cuttings	7.75	@	8.00
Dutch Blues	—	@	1.80
New Checks & Blues	4.00	@	4.50
Old Fustians	1.65	@	1.75
Old Linsey Garments	.85	@	.95

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.09¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.09½	@	.10½
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	7.12½	@	7.60
No. 2 M. F. (carloads)	6.90	@	7.35
No. 3 M. F. (carloads)	6.65	@	7.15
No. 1 S. C. (carloads)	7.60	@	8.10
No. 2 S. C. (carloads)	7.35	@	7.85
No. 3 S. C. (carloads)	7.12½	@	7.60
No. 4 S. C. (carloads)	5.95	@	6.40
No. 1 Coated and Litho	13.25	@	—
No. 2 Coated and Litho	12.25	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.50	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft No. 2	5.40	@	—
(Delivered Toronto)			
News, per ton—			
Rolls (contract)	61.50	@	63.00
Sheets	67.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	50.00	@	—
Sulphite, news grade	70.00	@	—
Sulphite, bleached	72.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.30	@	—
Soft White	2.60	@	—
White Blk. News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.10	@	—
Light and Crumpled Book Stock	1.20	@	—
Ledgers and Writings	—	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	.80	@	—
Kraft	1.90	@	—
News and Scrap—			
Strictly Overissue	.70	@	—
Strictly Folded	.70	@	—
No. 1 Mixed Paper	.60	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¼

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TABLE OF CONTENTS

Copyright, 1931, by the Lockwood Trade Journal Co., Inc.

Canada Anticipates Tariff Revision 13
Fraser Companies Reorganization 13
Pacific Coast Competition 13
Crown Zellerbach Pays Dividend 13
Paper Demand Broadens in Philadelphia 14
Westinghouse Installs Turbine 15
Champion Coated Reelects Officers 15
R. F. Engelhardt Resigns 15
Safety Conference at Fond du Lac 16
New Wood Room Completed at Biron Mill 16
Wisconsin National Forests Dedicated 16
Chicago Market Moderately Active 17
New Terminal to Benefit Paper Industry 17
Paperboard Industries Association Meets 17
New England Paper Business More Buoyant 18
New England Paper Men Hcld Outing 18
New York Trade Jottings 20
Construction News 22
New Companies 22
Power Plant Section 24
Editorial 32
New TAPPI Members 33
To Improve Tarentum Mills 33
L. F. Leach Dead 33

Technical Section

Lime Recovery 35
Standards of the Hydraulic Society 35
United States Patents on Papermaking 36
Delay in Filing a Patent Application 38
TAPPI Notes 38
New Pulp Mill Planned 38
Friction Losses in Cast Iron Pipe Carrying Paper Stock 39
Pulp Testing Committee Annual Report 41
Current Paper Trade Literature 43

Cost Section 47
Imports of Paper and Paper Stock 52
New York Market Review 56
Miscellaneous Markets 58
Market Quotations 60

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Want and For Sale Advertisements, 63-64-65

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